

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: National Economic Council
Series/Staff Member: Gene Sperling
Subseries:

OA/ID Number: 20240
FolderID:

Folder Title:
Digital Divide Trip Book April 17 & 18, 2000 [binder] [2]

Stack:	Row:	Section:	Shelf:	Position:
S	17	2	1	1

Clinton Presidential Records Digital Records Marker

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This marker identifies the place of a tabbed divider. Given our digitization capabilities, we are sometimes unable to adequately scan such dividers. The title from the original document is indicated below.

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DIGITAL DIVIDE POLICY BOOK

Q. Some have argued that there is no digital divide -- and that minorities are getting connected in increasing numbers? What's your response to that?

- First of all, we've never defined the digital divide as being solely a divide along ethnic or racial lines -- it's also a gap by income, education level, disability, and geography.
- Second -- it's not only access to hardware -- we need to train teachers to use technology effectively in the classroom, encourage more women and minorities to pursue high-tech careers, and encourage the development of applications of information technology -- such as compelling educational software that can get children excited about learning.
- Finally - the 1998 Census data that we have suggests that the differences between blacks and whites have narrowed at the upper income levels (above \$75,000) - but not at lower income levels. For example, 33 percent of white households with incomes of \$15,000 - \$35,000 have computers -- compared to 19 percent of black households.

[Note: argument that there is no "racial" divide is based on projections from market research companies.]

Q. Isn't this going to happen anyway - given rapidly falling prices of hardware and Internet access?

- We'd like it to happen faster. There was nothing inevitable about getting schools connected to the Internet - we catalyzed that with activities like NetDay and worked to ensure that poor schools are not left behind with the e-rate.
- Again, it's not just access to hardware -- we need to train teachers to use technology effectively in the classroom, encourage more women and minorities to pursue high-tech careers, and encourage the development of applications of information technology -- such as compelling educational software that can get children excited about learning.

Q. Isn't Administration's proposal corporate welfare?

- No -- we are providing tax incentives for them to take steps that are in the public interest -- such as donate computers to schools, libraries, and community technology centers.

THE IMPORTANCE OF BRIDGING THE DIGITAL DIVIDE AND CREATING DIGITAL OPPORTUNITY FOR ALL AMERICANS

April 17, 2000

- Access to computers and the Internet and the ability to effectively use this technology are becoming increasingly important for full participation in America's economic, political, and social life. In recent years, access to computers and the Internet has exploded. Unfortunately, there is strong evidence of a "digital divide" -- a gap between those individual and communities that have access to these Information Age tools and those who don't.
- Ensuring that more Americans have high-tech skills is important, since jobs in the IT sector pay almost 80 percent more than the private sector average. (Dept. of Commerce, Emerging Digital Economy II, June 1999).

Better-educated Americans are more likely to be connected.

- 69 percent of households with a bachelor's degree or higher have computers, compared to 16 percent of those households that have not completed high school. (Dept. of Commerce, "Falling Through The Net," July 1999).
- 45 percent of households with a bachelor's degree or more have Internet access in the home, compared to 4 percent with no high school education. (Dept. of Commerce, "Falling Through The Net," July 1999).

The divide between high and low-income Americans is significant.

- 80 percent of households with an income of \$75,000 or above have computers, compared to 16 percent of households earning \$10,000 - \$15,000. (Dept. of Commerce, "Falling Through The Net," July 1999).
- 60 percent of households with incomes of \$75,000 or above have Internet access, compared to 12 percent earning \$20,000 - \$25,000. (Dept. of Commerce, "Falling Through The Net," July 1999).

Whites are more likely to be connected than African-Americans and Hispanics.

- 47 percent of white households have computers, compared to 23 percent of African-American and 26 percent of Hispanic households. (Dept. of Commerce, "Falling Through The Net," July 1999).
- 53 percent of white, two-parent households with children earning more than \$35,000 have Internet access in the home, compared to 31 percent of African-American and Hispanic households. (Dept. of Commerce, "Falling Through The Net," July 1999).
- However, there is virtually no gap in computer ownership between white and African American households earning more than \$75,000. (Dept. of Commerce, "Falling Through The Net," July 1999).

Wealthier schools are more likely to be connected to the Internet than poorer schools

- In wealthy schools (less than 11 percent of students eligible for free or reduced-price school lunch), 74 percent of classrooms are connected to the Internet, compared to 39 percent for the poorest schools (71 percent or more of students eligible for free or reduced-price school lunch). (Fall 1999 data, Dept of Education, National Center for Education Statistics, "Internet Access in U.S. Public Schools and Classrooms," February 2000).

People with disabilities are less likely to have access to technology.

- 11 percent of people aged 15 and above with a disability have access to the Internet at home, compared to 31 percent of people without disabilities. (Current Population Survey, 1998 Computer and Internet Use Supplement, as cited in H. Stephen Kaye, Computer and Internet Use Among People with Disabilities, Disability Statistics Center, March 2000).

THE CLINTON-GORE AGENDA FOR CREATING DIGITAL OPPORTUNITY

Private sector competition and rapid technological progress are powerful forces for bridging the digital divide and for making Information Age tools available for more and more Americans. The information technology industry is able to double the amount of computing power available at a given price every 12-18 months, and is now selling low-cost computers and "information appliances" – such as specialized Internet access devices. Some companies are even offering free, advertiser-supported Internet access. By working with the private sector and community-based organizations, the Administration can accelerate the trend of expanded access.

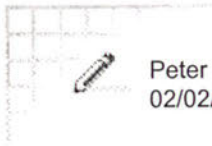
But access to technology is only the first step. We also need to give more people the skills they need to use technology, promote content and applications of technology that will help empower under-served communities, and ensure that our teachers can use technology effectively in the classroom. Below is a brief description of the initiatives that President Clinton and Vice President Gore are proposing to help accomplish these goals:

- \$2 billion over 10 years in tax incentives to encourage private sector donation of computers, sponsorship of community technology centers, and technology training for workers:** President Clinton's budget includes \$2 billion in tax incentives to encourage companies to donate computers to schools, libraries and community technology centers, to sponsor schools, libraries, and community technology centers in designated Empowerment Zones, and to provide basic computer training, workplace literacy, or other basic education for their employees.
 - **Encouraging companies to donate computers.** The President proposes to extend and expand an enhanced tax deduction to provide companies with an incentive to donate computers to schools, libraries and computer technology centers. This enhanced deduction allows companies to deduct more than the cost of their donation. Under current law, this enhanced deduction applies to donations of computers to schools only and expires after the year 2000. The President's proposal would extend this provision through June 30, 2004 and would expand it to donations to public libraries or community technology centers in Empowerment Zones, Enterprise Communities, and high-poverty areas.
 - **Promoting corporate sponsorship of schools, libraries and community technology centers.** The President proposes tax relief to encourage companies to sponsor schools and community technology centers in Empowerment Zones and Enterprise Communities and targeted low-income areas. The President's proposal would allocate credits for \$16 million in corporate sponsorship to each of the 31 existing Empowerment Zones and 10 proposed new Empowerment Zones and \$4 million in corporate sponsorship for each of the more than 80 Enterprise Communities. In total, the President's proposal would help support up to nearly \$1 billion in annual sponsorships to help improve schools and community technology centers.
 - **Supporting technology training for workers.** The President's proposal would provide targeted tax relief to encourage companies to provide basic computer training, workplace literacy, or other basic education for employees that lack the basic skills to succeed in the modern workplace. Companies would be allowed to take a 20 percent tax credit for up to \$5,250 in annual expenses per employee. Eligible employees generally would not have received a high school degree or its equivalent.
- \$150 million to help train all new teachers entering the workforce use technology effectively in the classroom:** Under the leadership of President Clinton and Vice President Gore, the United States has made enormous progress in connecting schools to the Internet, and increasing the number of modern computers in the classroom. However, access to computers and the Internet will not help students achieve high academic standards unless teachers are as comfortable with a computer as they are with a chalkboard. President Clinton's budget calls for \$150 million in Department of Education grants -- double the last year's investment of \$75 million -- to ensure that all new teachers entering the workforce are technologically literate and can integrate technology into the curriculum. The need for this investment is clear. According to the National Center for Education Statistics, only 20 percent of teachers report that they are "very well prepared" to integrate technology into classroom. And over the next 10 years, K-12 schools will need to hire 2 million new teachers to fill the vacancies left by retiring teachers and to accommodate increasing student populations.

3. **\$100 million to create up to 1,000 Community Technology Centers in low-income urban and rural communities:** The President's budget more than triples the Department of Education's support for Community Technology Centers - from \$32.5 million in FY2000 to \$100 million in FY2001. This initiative, championed by Congresswoman Maxine Waters was initially funded at \$10 million in fiscal year 1999. The goal of the initiative is to help close the "digital divide" by providing computers and Information Age tools to children and adults that are not able to afford them at home. These community technology centers will help empower hundreds of thousands of low-income children and adults in a variety of ways. Children will be able to improve their performance in school by having access to high-quality educational software after school and prepare for the high-tech workplace of the 21st century by getting certified with an information technology skill. Adults will be able to use computers and the Internet to take a self-paced adult literacy course; get access to America's Job Bank to see what jobs are available; learn to type up a resume and cover letter using word processing software; learn to start up their own "micro-enterprise" or Web-based business, or acquire new training. A study sponsored by the National Science Foundation confirms that Community Technology Centers are helping to bridge the digital divide. Of the users surveyed: 62 percent had incomes of less than \$15,000; 65 percent took computer classes to improve their job skills; and 41 percent got homework help or tutoring at the center.
4. **\$50 million for a public/private partnership to expand home access to computers and the Internet for low-income families:** The President's budget includes a new \$50 million Department of Commerce pilot program to expand access to computers and the Internet for low-income families, and to give these families the skills they need to use these new Information Age tools effectively. This new program will provide competitive grants to public-private partnerships at the local level. Potential partners might include: local school districts seeking to expand parental involvement in education; high-tech companies willing to provide discounts on computers and access; libraries offering training on "information literacy"; employers seeking to upgrade the skills of their workforce using distance learning, and government agencies at all levels seeking to save taxpayer dollars through the electronic delivery of government services. The Administration will continue to work with the private sector and non-profit organizations on the most effective way to design this program.
5. **\$45 million to promote innovative applications of information technology for under-served communities:** President Clinton's budget will increase the investment in the Department of Commerce's highly-successful Technology Opportunities Program (TOP) to \$45 million -- triple the current level of \$15 million. This program encourages innovative applications of information technology that help empower low-income communities -- public health information systems that raise childhood immunization rates in inner-cities, tele-mentoring for at-risk youth, and electronic networks that strengthen local communities by fostering communication and collaboration.
6. **\$25 million to accelerate private sector deployment of high-speed networks in under-served urban and rural communities:** High-speed Internet access is becoming as important to the economic vitality of a community as roads and bridges are today. The President will propose a new \$25 million program at the Department of Commerce and the Department of Agriculture to accelerate private sector deployment of broadband networks in under-served urban and rural communities -- using grants and loan guarantees. The potential payoff from these kinds of investments is enormous. One company, for example, has helped people move from "welfare-to-work" by connecting their community with the high-speed networks needed to support telecommuting. This solves some of the biggest barriers associated with welfare-to-work -- lack of childcare and transportation.
7. **\$10 million to prepare Native Americans for careers in information technology and other technical fields:** The National Science Foundation will support efforts by tribal colleges to increase the number of Native Americans who are prepared to pursue careers in information technology and other technical fields. The ability to use technology is becoming increasingly important in the workplace, and jobs in the rapidly growing information technology sector pay almost 80 percent more than the average private sector wage.

CLINTON ADMINISTRATION INITIATIVES TO HELP BRIDGE DIGITAL DIVIDE

Program	Department	FY 2000	FY2001	CHANGE
<p>Tax incentives to encourage private sector donation of computers, sponsorship of community technology centers, and technology training for workers. Specifically, this funding encourages companies to:</p> <ul style="list-style-type: none"> • donate computers to schools, libraries and community technology centers • sponsor schools, libraries, and community technology centers in designated Empowerment Zones, • provide basic computer training, workplace literacy, or other basic education for their employees. 			\$2 billion (tax incentives over 10 years)	
Funding to help train all new teachers entering the workforce to use technology effectively.	Education	\$75 million	\$150 million	\$75 million
Funding to create 1,000 Community Technology Centers in low-income urban and rural neighborhoods.	Education	\$32.5 million	\$100 million	\$67.5 million
Funding for a public/private partnership to expand home access to computers and the Internet for low-income families.	Commerce	0	\$50 million	\$50 million
Funding to promote innovative applications of information and communications technology for under-served communities.	Commerce	\$15 million	\$45 million	\$30 million
Funding to accelerate private sector deployment of broadband networks in under-served urban and rural communities.	Commerce / USDA	0	\$25 million	\$25 million
Funding to prepare Native Americans for careers in Information Technology and other technical fields.	NSF	0	\$10 million	\$10 million



Peter A. Weber
02/02/2000 09:17:58 AM

Record Type: Record

To: Thomas A. Kalil/OPD/EOP@EOP
cc: Wayne Upshaw/OMB/EOP@EOP
Subject: Technology Table

Below is the table that you requested.

Program	FY 2000 Enacted	FY 2001 Budget
Technology Literacy Challenge Fund	425	450
Next Generation (TICG & Star in FY 2000)	196.8	170
R*TECs	10	10
Community Based Tech. Centers	32.5	100
Technology Leadership Activities	2	2
Ready to Learn Digital Television	16	16
Preparing Tomorrow's Teachers	75	150
Telecom. Program for Prof. Dev.	8.5	5
TOTAL	765.8	903

April 9, 2000

MEMORANDUM TO GENE SPERLING

FROM: TOM KALIL

SUBJECT: THE ADMINISTRATION'S HIGH-TECH ACCOMPLISHMENTS

1. Why information and communications technology has been a priority for the Administration

- The IT industry is **driving U.S. economic growth**. In the last three years, IT has accounted for almost 1/3 of U.S. economic growth. Declining prices in the IT industry have lowered inflation by almost a full percentage point - and have helped the U.S. economy maintain this terrific combination of rapid growth, low unemployment, low inflation, and higher productivity.
- Second, the **IT industry is generating high-wage, high-skill jobs**. Wages in the IT sector are almost 80 percent higher than the private sector average.
- Third, **information technology is changing the way all companies do business**. IT now accounts for 1/2 of business investment. Companies are using IT to tailor their products and services to the needs of individual customers, forge closer relationships with their suppliers, and deliver just-in-time training to their employees. Customers can name a price they are willing to pay for a hotel or airline reservation - and force companies to compete for their business. Business-to-business e-commerce in the U.S. alone could reach \$1.3 trillion by the year 2003 - some estimates are even higher.
- Fourth, **the Internet is becoming a new communications medium in addition to a commercial marketplace**. It is different from radio, TV and print medium because it allows individuals to be producers as well as consumers of information, and it allows "many to many" interaction as opposed to the "one-to-many" communication of the broadcast medium. This has allowed for the formation of tens of thousands of "communities of interest" -- such as caregivers for people with Alzheimers disease. And unlike the traditional telecommunications network, which only allowed new services like call waiting and voice mail to be introduced by a few industry players -- the Internet has created an open platform for innovation.
- Fifth, **we are just at the beginning of the Information Revolution**. Although 275 million people are connected to the Internet, half of the world's population has never made a phone call. And there is every reason to believe that the incredible improvements in our ability to store, process and move information will continue for at least another 20 years. For example, the government is funding long-term research that could allow us to make transistors out of individual molecules -- and store trillions of bits of information in a square centimeter.

- **These technologies have the potential to deliver social as well as economic benefits.** Using distance learning, working adults can acquire new skills at a time, place and pace that is convenient for them. Telemedicine can improve the quality of health care in under-served rural communities. Technologies such as speech recognition and text-to-speech can allow people with disabilities participate in the workforce, and lead more independent lives. And IT can make help government at all levels more open, responsive and efficient.
- **Personal interest of the Vice President** -- long-standing interest and support for the "information superhighway" long before anyone outside of the research community was taking it seriously.

2. Actions the President and Vice President have taken to strengthen America's high-tech competitiveness and promote e-commerce and the Internet

- The Administration has **opened up foreign markets for high-tech goods and services and cracked down on foreign piracy.** The Administration has negotiated a number of important trade agreements, including:
 - The Information Technology Agreement (ITA), which will eventually eliminate tariffs on \$600 billion worth of goods: 95 percent of the world production of semiconductors, computers, telecom equipment, and other high-tech products.
 - The World Trade Organization's Basic Telecommunications Agreement, which will promote competition and privatization in a global telecommunications services market worth \$1 trillion.
 - Strong intellectual property protection as part of the GATT, NAFTA, and bilateral agreements.
- President Clinton and Vice President Gore have **liberalized export controls on computers and telecommunications equipment.** These decisions have increased U.S. high-tech exports while maintaining controls on those items that are truly important for U.S. national security.
- Administration pushed for **longer-extension of the R&E credit** - and got 5 year extension as part of the final tax package.
- Administration also succeeded in getting **patent reform** passed -- which will be good for inventors, entrepreneurs, and innovation.
- President Clinton and Vice President Gore fought for the **first comprehensive telecommunications reform legislation in over 60 years** – the Telecommunications Act of 1996. This Act is designed to promote competition in the telecommunications industry – which will lead to lower prices, more customer choice, and faster deployment of an advanced telecommunications infrastructure.
- Although it is taking longer than any of us would like -- **competition is beginning to emerge.** Using the pro-competition provisions of the Act, new carriers have entered the

market for voice and high-speed data and Internet access – attracting over \$30 billion in capital investment. **The U.S. has much lower prices for advanced telecommunications services than virtually any other country – giving American companies a tremendous competitive advantage.**

- The Administration has also **transferred large blocks of spectrum from government to private sector use – creating new digital wireless industries.** More than 80 million Americans now subscribe to wireless services – up from 16 million in 1993, and many Americans can choose from 4 or more wireless telecommunications companies.
- **The President and the Vice President have announced a framework for global electronic commerce that relies on market forces and private sector leadership whenever possible.** Since the framework was unveiled in 1997, we've made significant progress in implementing it, including:
 - A new export control regime that will allow U.S. companies to export **encryption** of unlimited bit-length, following a one-time technical review. Controls on export to terrorist nations and foreign governments would remain.
 - International agreements with other heads of state that adopt the Administration's market-led approach to e-commerce
 - **A three-year moratorium on Internet access taxes** and taxes that discriminate against e-commerce - to avoid thousands of different state and local jurisdictions each taxing the Internet in a different way
 - Passage of legislation that requires government agencies to recognize digital signatures for online transactions (note: this is legislation passed in 1998 - not the Bliley bill that the Administration opposed this year)
 - A growth in the number of e-commerce companies that have agreed to protect the **privacy of their consumers through meaningful self-regulation**, and targeted legislation to protect children's privacy online.
 - The transfer of the technical management of the Internet to an international non-profit organization
 - A temporary agreement to make cyberspace a duty-free zone
 - Ratification of the intellectual property treaties the Administration negotiated in Geneva
- **The Administration has worked to increase investment in long-term research that is beyond the 3-5 year time horizons of corporations.** Government-supported research, particularly in our nation's leading research universities, has played a critical role in the development of information technology. For example:
 - Government investment in the ARPANET beginning in 1969 led to today's Internet.

- The first graphical Web browser, Mosaic, was developed by Marc Andreessen at an NSF-sponsored supercomputer center
- Many of the Internet search engines are outgrowths of the Digital Library Initiative - jointly supported by NSF, DARPA and NASA
- The President and the Vice President have been champions of research initiatives such as the **Next Generation Internet** and "**Information Technology for the 21st Century.**" The IT initiative is based on the recommendations of the President's Information Technology Advisory Committee, which is composed of leading academic researchers and industry executives from companies such as Sun, IBM, 3Com, Intel and Microsoft. Although the results of these research initiatives are impossible to predict -- it could lead to computers that use DNA, an Internet that can connect billions of devices as opposed to just millions of computers, and computers that can more accurately predict tornadoes and hurricanes.
- As part of the FY2001 budget -- President Clinton has proposed an almost \$3 billion increase in R&D - including a major increase in the National Science Foundation budget and a new initiative in nanotechnology.

3. **Connecting our children to the future:**

- President and Vice President have set a national goal of **ensuring that every child is technologically literate.**
- That means that children will understand the mechanics of using computers and the Internet, but also be able to use it to improve their performance in all academic subjects -- and be able to acquire and synthesize information from multiple sources.
- In addition to preparing children for the high-tech workplace of the 21st century, it's an opportunity to change the way teachers teach and students learn. Teachers can communicate more frequently with parents, keep up with the latest developments in their field, and exchange lesson plans with their colleagues. Students can conduct research using primary source material, learn the principles of genetics by breeding virtual fruit flies, and learn astronomy by using a professional telescope located 3,000 miles from their classroom.
- Our educational technology strategy has four "pillars"
 - Connecting every classroom and library to the Internet by the year 2000.
 - Technology training for teachers
 - Modern computers in the classroom
 - High-quality educational software/content
- As a result of the Clinton-Gore educational technology initiative:

- The number of classrooms connected to the Internet has increased from 4 percent in 1994 to 63 percent in 1999.
- The "e-rate", part of the Telecommunications Act of 1996, is providing \$2.25 billion in 20% - 90% discounts to connect schools and libraries to the Internet, with the deepest discounts going to the poorest schools that need it most. **Our total investment in educational technology at the federal level (including the e-rate) has increased from \$23 million in 1993 to over \$3 billion today.**
- Grants supported by the Department of Education are training 400,000 new teachers to use technology effectively in the classroom.

4. From "digital divide" to "digital opportunity":

- Currently, urban households with more than \$75,000 and higher are twenty times more likely to have access to the Internet than rural households at the lowest income levels, and more than nine times as likely to have a computer at home.
- In addition to ensuring that all schools and libraries are connected to the Internet, President Clinton and Vice President Gore have also taken other steps to bridge the digital divide, including:
 - Increased investment in Community Technology Centers: The President's FY2001 budget calls for \$100 million to support Community Technology Centers in low-income urban and rural neighborhoods, up from \$32.5 million in FY2000.
 - Supporting innovative applications of information technology for low-income families through the Department of Commerce. Examples include the use of telemedicine for prenatal care, telementoring for at-risk youth, a national computer network for local food banks, and distance learning for people who have lost their jobs.

FROM DIGITAL DIVIDE TO DIGITAL OPPORTUNITY

A NATIONAL CALL TO ACTION

Access to information technology and the Internet and the ability to use this technology effectively are becoming increasingly important to full participation in America's economic, political and social life. While computer and Internet access has exploded in recent years, America faces a "digital divide"— a gap between those who have access to Information Age tools and the skills to use them and those who don't.

America has an important choice to make: we can allow unequal access to deepen existing divisions along the lines of race, income, education level, geography, and disability -- or we can use technology as a powerful tool to help make the American dream a reality for more people. To help create digital opportunity for more Americans, we must create strong partnerships between government, industry, and the rich mosaic of America's civil society -- including educators, labor unions, librarians, civil rights leaders, faith-based organizations, foundations, volunteers, and community-based organizations.

As companies, non-profit organizations and individuals, we are committed to taking concrete steps to meet two critical national goals: (1) Ensuring Access To 21st Century Learning Tools For Every Child In Every School; and (2) Expanding Digital Opportunity For Every American Family And Community. We pledge to support these two goals.

GOAL ONE: 21ST CENTURY LEARNING TOOLS FOR EVERY CHILD IN EVERY SCHOOL

For children to succeed, they need to master basic skills at an early age. A critical element of this is the need for information and technological literacy. To help achieve these aims, we must focus on a comprehensive approach to integrating technology into teaching and learning while recognizing that -- as powerful as technology is -- it is no substitute for an inspiring teacher or a loving parent. Together, we must:

1. Connect every classroom to the Internet
2. Ensure that all students have modern multi-media computer access, ideally at a ratio of 1 computer for every 4-5 students
3. Ensure that teachers are technologically literate and can integrate technology into the curriculum
4. Make available high quality educational software and online learning resources

GOAL TWO: DIGITAL OPPORTUNITY FOR EVERY AMERICAN FAMILY AND COMMUNITY To ensure that no family or community is left behind, we must:

1. Set the long-term goal of making home access to the Internet universal
2. Bring technology to every community -- urban, rural, and Native American -- through Community Technology Centers and high-speed networks
3. Give adults the skills they need to use information technology and compete for jobs in the IT sector
4. Motivate and inspire more people to appreciate the value of "getting connected"

**A NATIONAL CALL TO ACTION FOR
DIGITAL OPPORTUNITY**

**YES, WE SUPPORT THE CALL TO ACTION AND ARE COMMITTED
TO TAKING CONCRETE STEPS TOWARD MEETING THE TWO
NATIONAL GOALS FOR DIGITAL OPPORTUNITY.**

COMPANY/ORGANIZATION NAME:

PRESIDENT/CEO: _____

ADDRESS: _____

PHONE: _____ **FAX:** _____

E-MAIL: _____

PLEASE RETURN THIS FORM BY MARCH 24th TO:

Jackson Dunn, Office of Public Liaison

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By Ekaterina O. Walsh, Ph.D.

With Michael E. Gazala

Christine Ham

APRIL 11, 2000

The Truth About The Digital Divide

While Asian- and Hispanic-Americans lead in online use, African-Americans lag behind. Income disparities carve up a digital divide, and it won't close as long as they remain. Once online, the divide disappears -- ethnic groups don't behave differently on the Net.

INCOME DIVIDES CONSUMERS INTO DIGITAL HAVES AND HAVE-NOTS

The "digital divide" -- the gap between the Internet haves and have-nots -- is grabbing headlines, with much of the coverage suggesting that members of ethnic minorities lag behind online. Forrester's research confirms that a digital divide exists, but not all minorities show up on the wrong side of it. Our January 2000 representative mail survey of more than 80,000 US households reveals that:

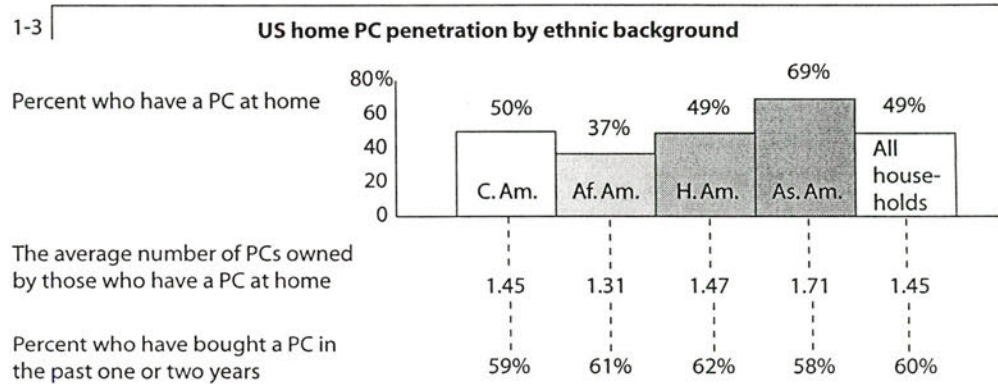
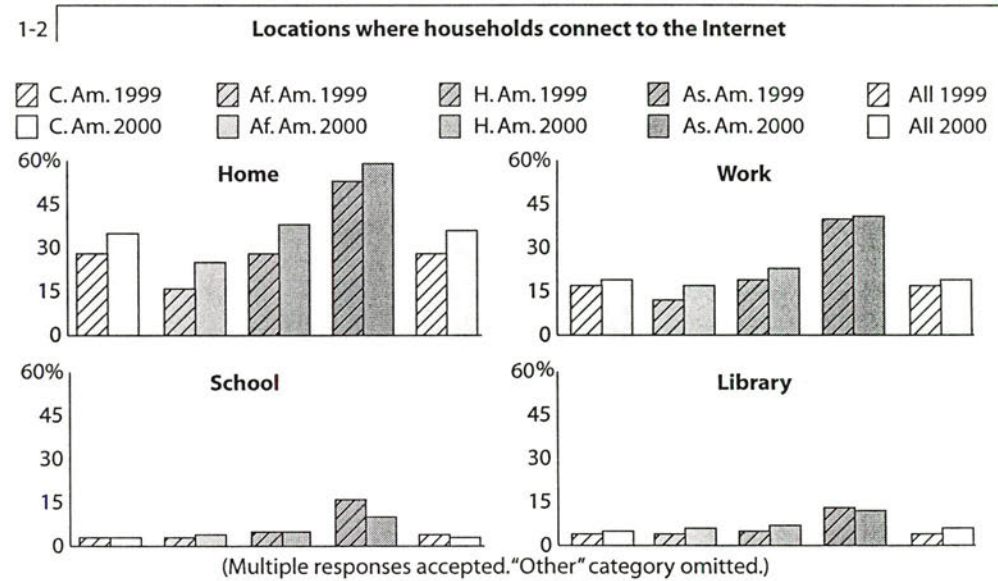
- **Asian- and Hispanic-Americans lead in online access.** Internet penetration among Asian-American households already matches that of mass consumer technologies like cable TV, while Hispanic-American households are 9% more likely than Caucasian ones to be online. Despite being the fastest-growing online group last year, African-American households still lag behind all other groups in Internet adoption (see Figure 1-1).
- **At-home Internet access grows for all ethnic groups.** In 1999, connectivity to the Net from home increased by at least 11% for all ethnic groups. Again, Asian- and Hispanic-American households lead (see Figure 1-2). Because African-Americans are least likely to own a PC, they are also least likely to connect from home (see Figure 1-3). Focusing solely on PC owners, we find no differences in quality of access: Across the board, about 60% purchased their computers in 1998 or 1999, virtually all home PCs feature modems, and most users dial in at 56 Kbps.

Figure 1 Internet And PC Penetration Among Ethnic Groups

1-1 **US online penetration by ethnic background**

	Percent online in January 2000	Percent online in January 1999	1999 growth rate
Caucasian-American (C. Am.)	43%	34%	27%
African-American (Af. Am.)	33%	23%	44%
Hispanic-American (H. Am.)	47%	36%	33%
Asian-American (As. Am.)	69%	64%	8%
All households	43%	35%	23%

Ethnic groups are ordered by number of US households (most to least)



Source: Forrester Research, Inc.

- **Income drives Internet access . . .** Although a combination of factors determines consumer likelihood to be online, income is the strongest predictor -- across ethnic groups, online penetration rises as income rises. Other drivers of Internet use include age, education, and technology optimism (see Figure 2). Ethnic background alone does not explain the existence of a digital divide: Once statistical analyses take into account the impact of income, age, education, and technology optimism, ethnic background does *not* materially influence online adoption (see the March 3, 1999 Forrester Brief "The Digital Melting Pot").
- **. . . therefore, African-Americans' online usage lags behind.** More than one in four African-American households lives on less than \$15,000 per year, compared with only 7% of Asian-, 14% of Hispanic-, and 17% of Caucasian-American households that do so. As long as income remains a critical driver of online adoption and household incomes differ markedly across ethnic groups, the US will be stuck with a digital divide.

THE DIGITAL DIVIDE CLOSES ONLINE

Once online, the digital divide virtually disappears. Regardless of ethnicity, consumers use the Internet for the same reasons and to do the same things (see Figure 3-1):

- **Communicate.** A shared motivation -- cheap and quick communication -- compels almost all consumers to go online. Sending email is the most popular online activity for all consumers, and more than two-thirds of respondents in each ethnic group say that it prompted them to get wired. Furthermore, ethnic background appears to have little impact on the uptake of newer online communication technologies like chat and instant messaging.
- **Access information.** Online consumers of all ethnic groups mine the Internet for information on everything from the weather to nutrition guides. Only minor differences exist in the *types* of information that interest various ethnic groups: African-Americans, for example, are more likely to seek health and job information, while more Asian-Americans use search engines and browse newspapers and magazines.
- **Have fun.** The quest for entertainment consistently influences how consumers of all ethnic backgrounds use the Internet. Again, only minor differences exist in the types of entertainment they seek -- African-Americans are more likely to play games online and Asian-Americans are more likely to download music.

Figure 2 Ethnic Background Does Not Materially Influence Internet Adoption

Factors influencing Internet adoption

Median annual household income	\$40,000	\$31,000	\$40,000	\$65,000	
Median age	47	44	40	36	
College educated*	29%	24%	26%	60%	
Technology optimists	51%	61%	58%	76%	

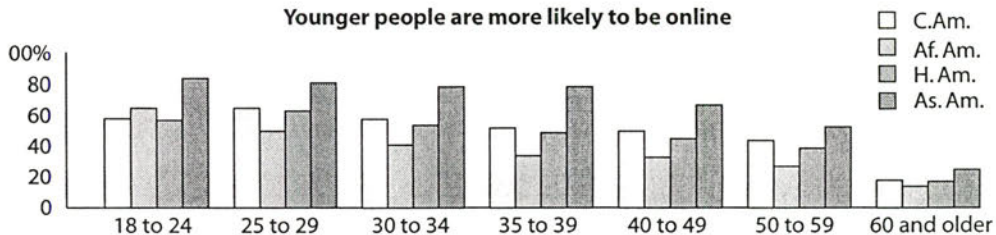
- C. Am.
- Af. Am.
- H. Am.
- As. Am.

*The college-educated category includes those who have either a college, graduate, or professional degree

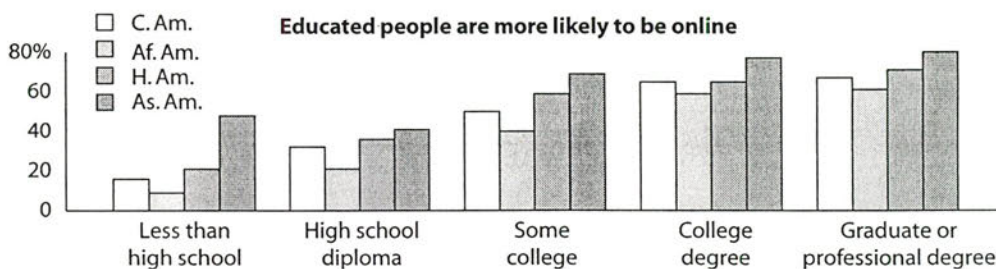
Income is the main driver of Internet adoption

	C. Am.	Af. Am.	H. Am.	As. Am.
Less than \$15,000	11%	7%	13%	35%
\$15,000 to \$24,999	25%	19%	35%	56%
\$25,000 to \$34,999	37%	36%	40%	71%
\$35,000 to \$49,999	48%	44%	50%	75%
\$50,000 to \$69,999	59%	51%	62%	74%
\$70,000 to \$99,999	64%	55%	68%	69%
\$100,000 or more	68%	65%	72%	79%

Younger people are more likely to be online



Educated people are more likely to be online



Technology optimists are more likely to be online

Percent of technology optimists online	58%	39%	57%	75%	
Percent of technology pessimists online	28%	22%	33%	51%	

- C. Am.
- Af. Am.
- H. Am.
- As. Am.

Source: Forrester Research, Inc.

- **Shop.** At first glance, the data shows deeper eCommerce penetration among Asian-Americans -- they are 30% more likely than any other ethnic group to buy online. But examination of specific online purchases by ethnic group reveals that all consumers progress almost in lock step through a retail adoption cycle -- buying convenience items the most, researched products second, and replenishment goods the least (see Figure 3-2).

HOW TO REACH ETHNIC GROUPS ONLINE

Our findings about various ethnic groups' online use have two implications for companies targeting ethnic groups on the Internet:

- 1) **Ethnic flavor alone does not lure visitors.** The immaterial impact of ethnic background on online behaviors highlights the need for sites to offer more than a generic ethnic label to attract visitors. Online users are not only Asian-, African-, Hispanic-, Polish-, or Irish-Americans -- each of them also has specific individual interests, ranging from arts and gardening to hunting and fishing, that are stronger drivers of surfing behavior.
- 2) **Ethnic sites should specialize.** The era of the broad-based portal is coming to an end -- Forrester expects that only three will remain by 2004 (see the December 1999 Forrester Report "The Parting Of The Portal Seas"). Niche sites hold the best chance of survival, and this trend applies to ethnic sites, too. With their clear differentiation, *batanga.com* -- which specializes in alternative Hispanic music for 16- to 28-year-olds -- and *minorityinterest.com* -- promising to connect minority users with minority-owned businesses -- have an edge amid the clamor of broad-based ethnic portals.

January 16, 2000

MEMORANDUM FOR GENE SPERLING

FROM: TOM KALIL

RE: BACKGROUND BRIEFING ON THE INTERNET

This memo is an effort to distill for you some information on Internet and high-tech to prepare you for your dinner on January 20th. It includes information on:

- I. Glossary of terms (there are at least 13,000 computer and Internet-related terms – this just covers a few).
- II. Big picture Qs and As (how does the Internet work, why is it important, etc.)
- III. Internet-related policy Qs and As
- IV. Industry and expert opinion about the future of the Internet
- V. Factoids
- VI. Points that you may wish to make

There may be a few additional Qs and As that I need to provide to you.

After you've had a chance to read this – please let me know what else you need – both short-term and long-term.

Glossary of terms

Attention economy: The argument that in today's economy – what is scarce is people's attention.

B2B: Abbreviation for “business-to-business” electronic commerce. Although it does not get as much press, it is rapidly becoming much larger and more important than its retail counterpart – **B2C** – or business-to-consumer.

Bandwidth: The measure of a network's ability to transmit information – measured in “bits per second.”

Bit: The smallest element of computer storage – it is either a “0” or a “1.” Short for “binary digit.”

Broadband: A network capable of transmitting more information, as opposed to a narrowband connection. The most likely (near-term) ways to access the Internet at broadband speeds are a cable modem (provided by upgraded, 2-way cable systems), and DSL (digital subscriber line – provided by local telecommunications companies). Other possibilities include wireless, satellite, and fiber-to-the home.

28-56 kilobits per second

Dial-up connection – how most people use the Internet.
Good for text, some graphics, AM quality radio.

500 kilobits – 2 megabits/second

Broadband connection for homes. CD-quality audio, can start to handle video.

45 megabits/second

Connection that a large business might have

1 gigabit/second and above

Next Generation Internet and Internet2 – can handle HDTV

Browser: The software used to explore the World Wide Web. Marc Andreessen developed the first graphical Web browser in 1993.

Byte: 8 bits – the amount of memory required to store a letter or a number.

Community of Interest: The Internet makes it easier to form “communities” that are based on shared interests as opposed to solely geography. Whether the ties that are formed by chatting and exchanging e-mail messages are strong enough to be called a community is hotly debated by social scientists. Web sites try to combine community, content, and commerce. A consumer might go to a parenting Web site, learn about what baby stroller is best by reading reviews from other users of the Web site, and then order the best one online.

Convergence: Somewhat fuzzy notion. Usually means that a number of services (Internet, television, radio, telephone) can or will be delivered over one network – because all of these services are digital.

Digital: Information represented as 0s or 1s – could be a phone conversation, an e-mail message, software, music, video, graphics, an electronic document, etc. An advantage of digital information is that it can be copied and stored almost perfectly an unlimited number of times.

Disintermediation: Idea that the “middle-man” will be cut out and buyers and sellers will interact directly. Although this is happening – you also have the emergence of new intermediaries – that provide services like comparison-shopping.

Domain name: The Internet address of an organization – such as “whitehouse.gov” or “amazon.com.”

Dot.com: Generic name for Internet start-ups.

E-business: Concept initially promoted by IBM – but now widely accepted by industry. The notion is that the Internet and information technology will transform not only the way a company buys and sells (e-commerce) – but all aspects of its business operations.

Extranet: A network that allows a firm to be linked securely (using encryption) to suppliers, customers, and other partners.

Information appliance: Not all of the devices that are connected to the Internet will be computers. “Information appliance” is a generic term used to describe lower-cost or specialized devices that might be connected to the network. An example is “WebTV” – now owned by Microsoft – which sells for \$100 - \$200.

Intranet: An internal network that a company or an organization uses to share information or handle internal business processes.

IP – or Internet Protocol: The single most important technical standard of the Internet. This standard breaks data into chunks called “packets” – and provides the information needed to move the data from point A to point B. You will often see this combined with another important Internet standard called Transmission Control Protocol (TCP/IP).

Killer app: The use or application of a new technology that spurs wide adoption of a new technology. The killer application of the personal computer was the Lotus spreadsheet – the first killer app of the Internet was e-mail.

Knowledge Management: New business fad – based on the observation that the information and expertise of its employees is one of the most valuable assets a company has. An example of a KM application is an “expertise map” that allows employees to find out “who knows what” within a firm.

Metcalf’s Law: Observation by Bob Metcalfe (developer of an important networking technology called Ethernet) that the value of a network increases with the square of the number

of people who are connected to it. If you have the only fax machine in town – it is not very useful. Economists refer to this as the “network effect.”

Moore’s Law: Observation by Gordon Moore (founder of Intel) in 1965 – that the number of transistors on a computer chip has been doubling – every 12-18 months. This prediction has proved to be true – and explains why computers have gotten better, faster and cheaper year after year.

Portal: A company like Yahoo that seeks to become the first place that consumers go to use the Internet. Portals are providing an increasingly wide range of services – such as a directory of web sites, search engines, free-email, personalized news, personal calendar, etc.

Router: Networking equipment used to transmit data. Cisco dominates this market.

Server: A computer that is used by an organization to support the activities of multiple individuals. For example, a “Web server” is a computer that might allow millions of people to download information or purchase something online. A **client** is a computer or software program used by an individual.

Ubiquitous computing: Also called pervasive computing. The notion that computing will not just be on your desk-top – but everywhere.

World Wide Web: An Internet application developed by Tim Berners-Lee at the European Laboratory for Particle Physics in 1989. It allows people and organizations to publish information on the Internet – and anyone with access to the World Wide Web to download that information. This is the application that really caused the Internet to take off because it gave “point and click” access to information.

I. Big Picture Qs and As

Q. How does the Internet work?

- At the heart of the Internet is a set of standards for moving data from point A to point B.
- The most important of these is the Internet Protocol. This breaks data (such as an e-mail message) into chunks called packets.
- Think of an Internet packet like a postcard. The postcard contains both a message and an address. Specialized computers (called routers) act like the post office – they look at the (destination) address on the packet and figure out where to forward it to.
- The Internet is a “network of networks.” If I subscribe to MCI and you subscribe to AOL, we can be sure that our Internet Service Providers have some mechanism for exchanging traffic, either directly or indirectly.
- What makes the Internet useful is a whole series of applications software and standards that build on the basic service that the Internet provides (moving data from point A to B.) These include:
 - E-mail;
 - World Wide Web;
 - Chat and instant messaging;
 - Internet news groups (postings by people around the world on a particular subject)
 - Real-time audio and video;
 - Phone calls over the Internet

And many, many, others.

Q. What’s different and special about the Internet as compared to broadcast (radio, television) and telecommunications networks? Why do people call it the biggest change in human communications since the printing press?

- It allows for individuals to be both producers as well as consumers of information, as opposed to broadcast technology. *New Yorker* press critic A.J. Liebling once remarked that "Freedom of the press is guaranteed only to those who own one." The Internet allows anyone with access the equivalent of a printing press – although no guarantee that anyone will pay attention.
- It allows “many to many” communication (e.g. a group of people participating on a Internet newsgroup or mailing list), as opposed to the “one to many” communication of broadcast television and the “one to one” communication of the telephone. This makes it easier to form communities based on shared interests as opposed to geography. There are over 100,000 public Internet mailing lists and newsgroups, and many more private ones.

- The most important standards are in the public domain and are not owned by anyone company. This promotes competition and consumer choice.
- Anyone can develop a new application or service for the Internet, and if it is popular, it will spread like wildfire. This accounts for the extraordinarily rapid rate of innovation on the Internet. Compare this to the telecommunications network, where essentially only a few phone companies can introduce new services (e.g. call waiting, voice mail, caller ID, etc.)

Q. Why does the U.S. have a commanding lead in the Internet industry?

- The Internet happened in the U.S. before it happened in the rest of the world – which gave U.S. companies a “time to market” advantage.
- The U.S. has world-class research universities – a great source of new ideas and talent. Many successful Internet and computer companies are a direct outgrowth of university research.
- The U.S. has lower telecommunications costs (no per minute charges for local service and a competitive long-distance market).
- U.S. economy and culture promote and encourage entrepreneurship (willingness to take risk, tolerance of failure, well-developed venture capital markets, huge financial rewards from stock options and equity – which is called “upside” in Silicon Valley).

Q. Why do some analysts believe that there is an “Internet bubble?”

- In past waves of technological innovation (railroads, computers, hard drives, biotechnology), investors fund lots of “me too” companies going after the same market. Inevitably, there is a period of consolidation and shake-out, and companies either go under or are acquired. A few companies do very well, but many more do not. Of the 1,200 technology-related IPOs since 1980, 5 percent have created 86 percent of the wealth.
- A recent analysis of 133 leading Internet stocks tried to calculate the possible size of the Internet bubble. The analysis assumed 5 years of hyper-growth, after which these stocks would be evaluated more like traditional high-tech companies, with an average P/E ratio.
- The June 1999 market capitalization of these companies was over \$400 billion! Even assuming that these companies grow at 50 to 65 percent per year – the size of the bubble could be \$130 billion - \$260 billion.

- Middle America could wind up holding much of the bag – since the “smart money” (venture capitalists, institutional investors) may have sold its stock, or bought it at a fraction of its current price.

Q. Why has the Internet and high-tech in general been a priority for the Administration?

- The IT industry is **driving U.S. economic growth**. In the last three years, IT has accounted for almost 1/3 of U.S. economic growth. Declining prices in the IT industry have lowered inflation by almost a full percentage point - and have helped the U.S. economy maintain this terrific combination of rapid growth, low unemployment, low inflation, and higher productivity.
- The **IT industry is generating high-wage, high-skill jobs**. Wages in the IT sector are almost 80 percent higher than the private sector average.
- **Information technology is changing the way all companies do business**. IT now accounts for 1/2 of business investment. Companies are using IT to tailor their products and services to the needs of individual customers, forge closer relationships with their suppliers, and deliver just-in-time training to their employees. Customers can name a price they are willing to pay for a hotel or airline reservation - and force companies to compete for their business. Business-to-business e-commerce in the U.S. alone could reach \$1.4 trillion by the year 2003.
- **The Internet is becoming a new communications medium in addition to a commercial marketplace**.
- **We are just at the beginning of the Information Revolution**. Although 200 million people are connected to the Internet, half of the world's population has never made a phone call. Only 1.4 million American households have broadband Internet access. And there is every reason to believe that the incredible improvements in our ability to store, process and move information will continue for at least another 20 years. For example, the nanotechnology initiative will support long-term research that could allow us to make transistors out of individual molecules -- and store the equivalent of the Library of Congress on a chip the size of a sugar cube.
- **These technologies have the potential to deliver social as well as economic benefits**. Using distance learning, working adults can acquire new skills at a time, place and pace that is convenient for them. Telemedicine can improve the quality of health care in under-served rural communities. Technologies such as speech recognition and text-to-speech can allow people with disabilities participate in the workforce, and lead more independent lives. And IT can make help government at all levels more open, responsive and efficient.
- **Personal interest of the Vice President** -- long-standing interest and support for the "information superhighway" long before anyone outside of the research community was taking it seriously.

III. Internet-related and high-tech Qs and As

Q: What are the Administration's views on having legal protections for privacy on the Internet?

The President and Vice President are committed to making sure that Americans have effective privacy and other consumer protections when they go online. Unless individuals have confidence in how they will be treated online, the full potential of the Internet will never be realized.

The issue we all face is how to obtain the protections, so that they are developed in Internet time and well-suited to the new medium. Our judgment has been that we should support self-regulatory privacy efforts, and the results this year have been encouraging. In early 1998, only about 15% of the significant commercial web sites had a privacy policy. In a study done this spring, that figure had risen to 67% -- remarkable progress in one year, and due in large measure to the work of Secretary of Commerce Daley, Federal Trade Commission Chairman Pitofsky, and others to encourage the private sector to put good practices in place.

These steps are encouraging, but we need to keep a close eye on how privacy protections develop on the Internet. For instance, only 10% of the commercial sites that were in the spring survey had all of the key privacy protections -- notice, choice, access, security, and enforcement. We have to do better.

Q: But aren't legal protections needed for privacy, at least in some circumstances?

Yes. There are certain sorts of especially sensitive information, where we have seen abuses and where we should protect privacy as a matter of law. For example:

Children online. Last year the President supported and signed the Children's Online Privacy Protection Act of 1998. Before that law was passed, we saw abusive practices by some web sites, which essentially used very young children as informants about their parents. Under the new law, sites aimed at children under the age of 13 must get verifiable parental consent before they gather and use personal information received from the children.

Medical privacy. Every American has a right to know that his or her medical records are protected at all times from falling into the wrong hands. And yet, as more and more of our medical records are stored electronically, the threats to our privacy have greatly increased. Recently, the President announced comprehensive proposed regulations for the protection of medical records. The President and Vice President have also called upon Congress to pass additional legislation that would fill gaps in our current authority, such as to cover all paper records and all employers.

Financial privacy. The new financial modernization law, passed by Congress last week, will provide protections that go well beyond existing law, such as clear notice of how institutions share financial data, the right to block sharing or sale outside a financial

institution's corporate family, and new and significant enforcement provisions. When the President put forward his financial privacy plan this May, the financial modernization bills that Congress was drafting contained almost none of these protections. So, the new law reflects a real improvement over the status quo. But we will not rest. We will continue to press for even greater protections -- especially for effective choice about whether personal financial information can be shared with affiliates.

Q. Should the Internet remain tax-free?

The President and Vice President supported the Internet Tax Freedom Act, which established a 3 year moratorium on new taxes on Internet access and electronic commerce, and also created a Congressional Advisory Commission to look at the long-term issues raised by e-commerce.

We don't want to prejudge the work of the Commission, but the Administration is committed to finding a solution to this issue that will allow the Internet and e-commerce to flourish, but without stripping states and localities of the revenue they need to educate our children and fight crime.

[Note: We are tentatively thinking about supporting a permanent (or at least 5 year) moratorium on Internet access taxes and multiple or discriminatory taxes, and a "standstill" on any changes in the definition of nexus while states and localities develop and adopt a uniform law on sales and use taxes.]

Q. What kind of protection does the government offer from Internet fraud?

The government offers the same consumer protections against fraud online as it does offline. The Federal Trade Commission Act gives the Federal Trade Commission (FTC) the tools it needs to act in the interest of all consumers to prevent deceptive and unfair acts or practices. The FTC Act prohibits unfair or deceptive advertising in any medium. In fact, the FTC is aggressively prosecuting fraudulent practices and misleading ads in the online marketplace under existing consumer protection laws. The FTC has brought over 100 enforcement actions ranging from garden variety pyramid schemes and miracle cure health care products to technologically sophisticated scams.

Q. Are you concerned about the "digital divide"? What are you doing about it?

Yes, the Administration is very concerned - information technology should bring us together - not result in further polarization of our society.

To address the digital divide, the President and Vice President have worked to:

- Connect every classroom to the Internet, and provide our children with modern computers, technology-savvy teachers, and high-quality educational software;
- Increase support for Community Technology Centers in low-income neighborhoods.

- We will be announcing additional “digital divide” issues in the President’s FY2001 budget, and the President will be leading a “New Markets” tour that will focus on the digital divide in the spring.
- Market forces and technology will also help bridge the digital divide -- because computers are continuing to get faster and cheaper every year.

Q. Do we need to rewrite the Telecom Act to encourage residential broadband deployment?

No. We think that the Telecom Act is beginning to work. Cable companies, phone companies, new entrants, satellite companies, etc. are all competing with one another. Competition will lead to lower prices, more customer choice, and faster deployment of the technology. For example, cable companies report that they will be able to reach over half of U.S. households by the end of 2000.

IV. Industry and expert views about the future of the Internet and information technology

1. Internet is inherently unpredictable – we will continue to be surprised by its uses.
2. Continued rapid growth in:
 - Number of people connected to the Internet (now at 200 million – could be 1 billion by 2005)
 - Volume of e-commerce (especially business-to-business)
 - Quantity of information accessible on the Web
3. Continued declines in the cost of storing, processing, and transmitting information.
4. Wider variety of things connected to the Internet – not just computers but Web-phones (combination digital cell-phone, personal organizer, Web device), information appliances, household appliances, sensors, etc. More goods become “intelligent” (the refrigerator that knows when it needs to be fixed, and sends a message to the manufacturer.)
5. Greater penetration of broadband networks to home – less frustrating to download information, ability to support multimedia applications like video and CD-quality, always on “Internet.”
6. More and more voice traffic migrates to the Internet.
7. Greater use of encryption because of recent changes in government policy, and expiration of some key patents.
8. Transformation of different sectors of the economy that adopt it – and emergence of new business models and business processes. Examples:
 - Mass customization – companies allow you to tell them exactly what kind of good or service that you want – and don’t manufacture and ship it until you request it.
 - Real-time auctions or “name your price” increasingly replaces fixed pricing.
 - Real-estate: Customers enter price-range, number of rooms, importance of school performance, crime rate, etc. and get back a list of homes on the market that meet their requirements. Customers can also take a 3-D tour of the house before visiting.
 - Health: More informed decisions by consumers because of access to consumer health information. An “electronic patient record” under the control of the patient. Reduced

administrative costs because of electronic connections between consumers, physicians, hospitals, HMOs, employers, Medicare/Medicaid, labs, etc.

9. Examples of emerging computer and Internet technologies:

- Intelligent agents that can perform simple tasks like find me the cheapest airline ticket to Ann Arbor, page me if the departure time changes, etc.
- Speech recognition (eliminate the need for a keyboard)
- Natural language understanding (computers that can disambiguate between multiple sense of the same word through context – very hard, may not happen)
- Video-on-demand – every video can be downloaded and played back – no more trips to the video-store (been predicted for a long time).
- Much better tools for collaboration and for supporting distributed teams.
- Multicast – selective broadcast of information – could lead to an infinite number of video-channels
- Authentication – ability to prove that you are who you say you are using digital signatures or some other technology

10. Possible downsides

- Erosion of privacy – tracking of people’s “mouse-clicks” on the Internet
- Digital divide
- Cyber-terrorism or collapse of system (equivalent of brown-outs or black-outs)
- People increasingly disconnected from reality
- Access to inappropriate material, cyber-stalking
- Fraud and other cyber-crimes
- Economic disruption (fewer retail dollars spent on “Main Street”)
- Control of Internet by a few major companies

VI. Facts about the Internet, Information Technology, and electronic commerce

1. **201 million people online – worldwide**

- As of September 1999, there were 201 million people online.

2. **109.9 million people online in the U.S.**

- As of September 1999, there were 109.9 million people online in the United States.

3. **1 billion people could be online as soon as 2005**

4. **One-third of U.S. economic growth accounted for by IT industry**

- Between 1995 and 1998, the IT industry (computer and communications hardware, software, and services) accounted for 35 percent of the nation's real economic growth.

5. **Jobs in IT industry pay almost 80 percent more than average private sector wages**

- In 1997, jobs in IT industries paid 78 percent more than the average private sector wage - \$52,920 compared to \$29,787.

6. **As of December 1999 -- there are 9.5 million sites on the World Wide Web, up from 50 in early 1993**

7. **The number of computers connected to the Internet has increased from 1.3 million in 1993 to 56.2 million in July 1999**

- The number of computers connected to the Internet has increased from 1.3 million in January 1993 to 56.2 million in July 1999.

8. **U.S. e-commerce is projected to grow to \$1.4 trillion by 2003**

- By one estimate -- U.S. business-to-business e-commerce is projected to increase from \$43 billion in 1998 to \$1.4 trillion. Some estimates are even higher.

9. **Information technology has reduced inflation by almost a full percentage point**

- In 1996 and 1997, falling prices in the IT sector brought down overall inflation by 0.7 percent points, helping us control inflation and keep interest rates low in a period of historically low unemployment.

10. **17 million American households will shop online in 1999**
 - 17 million American households will shop online by year end, with total retail sales of \$20.2 billion.
11. **In 1998, Americans sent or received 3.4 trillion e-mail messages**
 - In 1998, Americans sent or received 3.4 trillion e-mail messages, compared to 107 billion pieces of first class mail.
12. **Percentage of classrooms in public schools connected to the Internet has increased from 3 percent in 1994 to 51 percent in 1998**
 - The percentage of classrooms in public schools connected with the Internet has increased from 3 percent in 1994 to 51 percent in 1998. This percentage will continue to grow as more schools take advantage of the "e-rate." The percentage of public schools with Internet access has increased from 35 percent to 89 percent during the same period.
13. **In 1997, the United States had more than 6 times as much venture capital flowing into information technology and communications companies as the European Union and Japan combined**

April 8, 2000

MEMORANDUM FOR GENE SPERLING

FROM: TOM KALIL

RE: BACKGROUND ON BROADBAND

Definition

- There is no one universally accepted definition of broadband - but generally it refers to a network capable of sending and receiving data at much higher speeds than today's "narrowband" connections.
- Network speeds (or bandwidth) is measured in "bits per second." Today, most people connect to the Internet using an ordinary phone line and a modem with a bandwidth of 28 to 56 kilobits per second. A broadband connection to the Internet might provide speeds of hundreds of kilobits per second or even megabits (millions of bits) per second.
- Large businesses have been able to purchase broadband connections to the Internet for a while. It has only been within the last few years that cable companies and telecommunications companies have started to market broadband services to the home at a price that is affordable for more consumers.

Importance of broadband

Broadband is important for a number of reasons:

- Broadband networks can support a wider range of applications -- such as video-conferencing, video streaming, CD-quality audio, 3-D graphics, and lightning-fast download of software programs and computer files. Trying to do these applications over a "narrowband" connection to the Internet is painful or impossible. Video is likely to be jerky or the size of a postage stamp. Downloading a large picture is like watching paint dry -- a phenomena known as the "World Wide Wait."
- Broadband can be "always on." That means that people are more likely to use the Internet than if they have to spend the time to dial-up to their Internet Service Provider. It also means that more devices in the home can be connected to the Internet (e.g. burglar alarms, refrigerators that can alert their manufacturer when they are in need of maintenance, etc.)
- Broadband is important for business. If broadband is either not available or prohibitively expensive in a particular region of the country, businesses will find it difficult to compete. Businesses need higher speed connections to connect to their customers and suppliers.
- Widespread deployment could have broader social benefits as well -- supporting applications such as telemedicine, distance learning, and telecommuting.

Price and level of access

- Generally, broadband access to the Internet costs at least \$40 - \$50/month, compared to narrowband access to the Internet, which costs roughly \$20/month, and be even cheaper for customers that are willing to make a multi-year commitment to a single Internet Service provider. There can also be one-time equipment and installation charges.
- The FCC estimates that of the 105 million households in the U.S.:
 - 50 million households can purchase broadband from at least one provider (typically a cable company or a local phone company)
 - Tens of millions of households have a choice of two providers
 - A few million households have a choice of 3 or more
- As of the end of 1999 - an estimated 1-2 million households had actually purchased broadband Internet access.
- Estimates of how quickly for broadband access will increase vary widely. I have seen estimates of 16.6 to 28.6 million high-speed Internet access subscribers by 2004.

Different kinds of broadband

Market research firms that DSL and cable modems will be the dominant broadband technology over the next 3-4 years, but that satellite and wireless could play a significant role as well.

1. Digital subscriber line (DSL)

- Typically deployed by the local phone companies (SBC, Bell Atlantic) - and the competitive local exchange carriers (CLECs) that compete against them by leasing parts of their network.
- Major advantage is that it uses the existing copper phone lines that are now used to carry voice traffic.
- Major disadvantage is that not all phone lines are capable of handling DSL. For example, a phone line that is longer than 12,000 - 18,000 feet from the residence to the "central office" (the place where telecommunications companies locate their equipment). Note that this is particularly a problem for rural areas.
- Note that local phone companies have been able to charge their business customers much more for high-speed Internet access (hundreds or even thousands of dollar per month). To be able to maintain these price differentials -- they have marketed a service to residential customers that is "asymmetric." That means that residential consumers can download a lot of information, but their ability to send information is limited. Phone companies would argue

that most residential customers have this usage pattern. Their critics argue that the phone companies are marketing this service to protect their profit margins from their business customers.

2. Cable modem

- Uses the cable network to deliver high-speed Internet access -- which is a combination of fiber and coaxial cable.
- Advantage is that cable networks pass most American households -- and that by 2001 -- up to 71 million households will be passed by cable systems that are "two-way capable." Cable companies had to upgrade their networks to support high-speed Internet access.
- Disadvantage of cable modems is that the bandwidth of cable networks for Internet access is shared between subscribers. The more subscribers you have, the less bandwidth each customer has.

3. Wireless and satellite

- There are a variety of wireless and satellite alternatives as well. They are not expected to penetrate the market as quickly as DSL and cable modems, although they could be important in some rural markets.
- Hughes offers a service called DirecPC. It uses a satellite link to provide broadband downstream -- but customers have to use a regular phone line for upstream communication. There are other satellite companies that are beginning to market 2-way broadband satellite service.
- MCI and Sprint are beginning to do trials of a wireless service called MMDS (Multichannel Multipoint Distribution System). MMDS is a fixed service -- as opposed a mobile service like cell phones. It uses a tower -- and has a maximum range of 35 miles in all directions.

4. Fiber-to-the-home

- The ultimate in broadband would be running optical fiber all the way to the home, or at least to the curb. There are not many companies deploying fiber-to-the-home systems at this point because of the expense.

Public policy issues

1. Promoting competition for broadband services using the Telecommunications Act of 1996

- Passage of the Telecommunications Act of 1996 helped to spur competition in the market for broadband services because it imposed certain requirements on the local phone companies like Bell Atlantic, SBC, and US West known as ILECs (incumbent local exchange carriers). ILECs are required under the act to allow their competitors to:

- Lease parts of their network (known as unbundling);
- Interconnect with their network (interconnection);
- Locate equipment in their central offices (colocation).
- All of this spurred the development of competitive local exchange carriers (CLECs) -- who are able to provide high-speed Internet access without building out a whole new network. Covad is an example of a CLEC. Some of these companies literally would not exist were it not for the Telecommunications Act of 1996.
- The Administration has been a supporter of the Telecommunications Act and its continued enforcement.

2. Deregulation of ILECs

- The central bargain of the Telecommunications Act of 1996 is that ILECs would be allowed to enter the long distance market after they took steps to open up their own (local) market.
- So far, only one ILEC (Bell Atlantic) and has received permission from the FCC to provide long distance in one state (New York). Even this is not going smoothly, because Bell Atlantic is finding it difficult to transfer customers from Bell Atlantic to AT&T and other phone companies that are trying to enter the local market.
- Because Internet traffic crosses long-distance boundaries, the ILECs can't be Internet Service Providers without teaming up with another ISP for the long-distance portion of the Internet traffic.
- ILECs are arguing before the Hill that they should be allowed to provide Internet access, and that the restrictions on their ability to provide long-distance service should not apply to the Internet.
- Long-distance companies and CLECs have argued that if ILECs are allowed to provide Internet service before opening up their local market -- they will have no incentive to open up their market in the future. The Administration has generally found the argument of the long-distance companies and CLECs to be more persuasive.

3. Open access to cable networks

- Under the Telecommunications Act of 1996, cable companies don't have the same obligations to open up their network as the local phone companies do. They were regulated as cable companies as opposed to "common carriers."
- For several years, some Internet Service Providers (including AOL) argued that cable companies should have to open up their networks -- so that customers could have a choice of

ISPs. Their argument was that cable companies would monopolize the Internet -- and fundamentally change its open nature.

- They were not successful at the federal level in convincing the FCC, the Administration, or the Congress that this was a good idea. They did convince some cities to impose "open access" requirements on cable systems - and these are currently in the courts.
- The Administration took the view that customer choice of Internet Service Providers was a good goal, but that the market was likely to lead to this outcome because of competition between cable modem, DSL and wireless technology. The FCC was also opposed to imposing new regulations on cable companies before there was any real evidence of a problem (cable monopolies over high-speed Internet access) - given that there were so few subscribers of high-speed Internet access. The FCC did say that they would continue to monitor developments in the marketplace. There was also a concern that new regulations imposed on cable companies would increase uncertainty and deter investment in upgrading cable systems.
- This issue has quieted down in recent months for several reasons:
 - AOL and Time Warner merged. AOL stopped lobbying for "open access" legislation, although they said that they would open the Time Warner cable network to other Internet Service Providers.
 - AT&T (which purchased the TCI cable system) said that they would make arrangements to provide access to third-party Internet Service Providers in 2002. [TCI had an exclusive arrangement with a high-speed Internet access company called @Home. AT&T inherited this exclusive arrangement when they bought TCI -- but this contract will expire in 2002.]
- Consumer and public interest groups continue to express concerns -- and note that the AT&T and AOL flip-flops demonstrate the importance of not making policy on the basis of corporate interests.