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# PRC Internet:
# Cheaper, More Popular And More Chinese



*An October 1998 report from U.S. Embassy Beijing*

## *Summary*:

*Chinese efforts to popularize and boost the Chinese language presence on the Internet through a low-cost domestic-only service, a convenient non-registration Internet service added to the telephone bill, and increased Chinese language content will likely push the total number of Chinese users to over 5 million by the year 2000. Internet use and home PC sales in China will about double this year but most Internet Service Providers are losing money. The PRC government strives to assure China's place it what it sees as the coming global "information-based economy" by promoting information networks. Some Chinese commentators fear that in this new "information economy" developing countries like China will fall further and further behind. Some industry observers believe that a combination of highly preferential pricing and appealing Chinese language content would in itself be sufficient to restrict the vast majority of China's Internet users to domestic websites and so eliminate the need to rely on ineffectual blocking techniques. The Chinese language Internet is bringing an ever richer diet of information to Chinese people. Thousands of high school students now turn to on-line cram schools to prepare for examinations. An appendix lists Chinese search engines and useful starting points for Chinese language Internet exploration.*

## *Cheaper China-Only Net Service: Chinanet's 169 Network*

The Chinanet 169 public access network, which started last year and formally opened nationwide in 1998, has already attracted 300,000 subscribers to its low cost China-only Internet service and expanded Chinese language content (0.03 RMB/minute equals 1.8 RMB/hr or USD .22/hr plus a 10 RMB/month access fee). Subscribers to the 169 network can choose an account that offers full Internet access (the same service which subscribers to the existing Chinanet 163 public access have enjoyed since 1995) but which costs about five times as much as domestic PRC-only Internet service. A Chinanet manager said recently that the 169 domestic network uses a non-standard network addressing system so that more network addresses will be available for Chinese users. A network interface allows all subscribers to exchange e-mail with the worldwide Internet and, for subscribers with the full access option, to visit foreign websites. Subscribers to the 169 network domestic-only option can exchange e-mail messages from Internet users worldwide but cannot access foreign websites.

## *Convenient No-Application Internet Access: Just Dial 169*

Getting on the net through the "169" access number is easy. [Note:Simply dial 169, use login name 169 and password "169" and you are on the net. End note.] Users who dial in without a network subscription agreement pay about double the rate of 169 subscribers (0.07 RMB/minute (4.2 RMB/hr) for this convenience. The bill appears as an information fee on subscriber telephone bills. Chinanet also offers users the 263 no-application dialup service which provides full international internet service at about five times the cost of domestic-only Internet service. Users who agree to pay

a flat rate every month for a certain number of hours of Internet use can get a better effective hourly rate. A full international service option user who agrees to pay RMB 300 per month can get 75 hours of use from Chinanet (and pay 30 RMB per hour over 75 hours) and unlimited service from Eastnet, an ISP. The manager said that full Internet access was much more expensive because of the cost of international Internet connections to the United States for which (unlike international voice telephone connections which are cost-shared) are transmitted on leased lines for which the Chinese side had to pay the entire cost.

## Despite Rapid Internet Growth, Little Profit for ISPs

The former monopoly operator China Telecom runs the largest commercial Internet network (Chinanet). The sole other commercial network is Golden Bridge or GB Net. Chinanet with its 163, 169 and 263 services (these numbers refer to the access number for the service) is the dominant ISP in China. Data communication, including Internet services, are one of the value-added telecom services that China opened to competition for domestic companies.

Industry observers estimate that there are over 200 ISPs in China. Industry observers claim that most, if not all, are losing money on Internet service operations. Barriers to entering the Internet business are low, competitors are many, and profit margins for PRC Internet service providers (ISP) are thin. Investors in one of the pioneers of Internet in China, Information Highway, invited its founding CEO to leave in June. The investors decided that the rapid expansion of the company from Beijing to several other large cities had attracted many Internet enthusiasts (sometimes called webbugs (wangchong) ) but few big spenders who could enable the company to earn back the large investment it had made to expand.

According to a commentary in the September 18 China Commercial News [Zhongguo Shangye Bao], high net access fees collected by the government telecommunications monopoly limit the development of the Internet. The commentary called on the telecommunications authorities not to think only of profits for itself but to allow everyone to benefit by dropping Internet usage charges. Chinese ISPs must pay out 80 percent of the income in net access fees compared to just 5.6 percent in the United States. Sometimes an ISP while paying RMB 90 (USD 10) per hour for a leased line can only earn a few tens of RMB (several dollars) from its users.

Some Chinese Internet experts have told the Embassy that PRC Internet service providers sometimes buy unused capacity on corporate networks that connect to the United States and other foreign countries. [Comment: This practice, although not in accordance with PRC government regulations, is fairly common. In the rapidly developing Internet and telecommunications industry, there is a "Wild West" atmosphere in which the sheriff has not caught up with the pace of technological expansion. Moreover, many businessmen, especially the large number who are in a business partnership with their regulators, feel free not to worry too much about rules. End comment]

## Who is the Typical Chinese Net User?

A survey of 2500 Chinese Internet users released in July by the State Council Information Office and the China National Network Information Center (see Appendix Two for a summary of the survey) shows that net use is still mostly concentrated in Beijing (25 percent), Guangdong (11 percent), and Shanghai (7.8 percent). According to the survey, Internet users are clustered in business, industry (especially telecommunications) government, science and technology in China, with about ten percent in each group. Only about 13 percent of all users are students. The respondents say the net is too slow (89 pct) and too expensive (61 percent). Most (75 percent) would like to buy things online but fear that there is inadequate legal protection and they might very well be sent inferior goods. The average user is 25 years old, earns 1000 RMB per month, and spends 10 hours per month online. Ten percent of users work for the party or government, 7 percent are teachers and 19 percent are in the computer industry. China's international Internet traffic capacity totaled 84.64 Mbits/s in June with Chinanet alone accounting for 78 Mbits/s.

## *PRC Aim: To Make the Net Accessible to All in Chinese*

The Chinanet manager said that the 169 network has been built as the start of a national multi-media broadband communications backbone that will make the economic and educational benefits of the Internet available to the Chinese people at large. Chinese content provider Sinanet estimates that nineteen million Chinese-speaking people will use the Internet by the Year 2000. Currently less than three percent of China's urban population uses the Internet so there is tremendous potential for growth. The expense and lack of Chinese-language content once limited Internet use among Chinese mostly to teachers, students and researchers who understood English and had access to university or institutional Internet connections. Chinese language content providers can benefit from lower rates on Internet connections, said the manager. The 169 network also provides for free posting of information. In addition to China Telecom, at least three other ISPs will offer international connections through China Telecom network. The manager said that, although there is no government policy requiring Chinese ministries to go on the Internet, several central government offices have built websites. National pride seems to be a factor in expanding China's presence on the network as well. Chinese websites, once mostly copies of foreign models, more and more often have distinctively Chinese graphics and design.

## *The Net and The Knowledge Economy: Opportunity or Threat?*

One factor driving Internet development in China seems to be the conviction that high tech, be it the Internet or research into biotechnology will make a critical difference to China's future.

A commentary in the October 12 People's Daily [see summary in Appendix Two] worries that as science and technology contribute proprotionately more to the growth rates of the developed countries, the developing countries may in the new global "knowledge-based economy" fall further and further behind. Many commentaries in the People's Daily and other newspapers (as for example the October 20 People's Daily article on "The Information Economy and Reforming the Structure of Higher Education" mention President Jiang's reference to "the knowledge economy" in his speech at the Beijing University centenary celebration.

The most popular of the information economy books, already in its fifth printing, "The Knowledge Economy" by engineer and former UNESCO official Wu Jisong [Standard Telegraphic Code:0702 1323 2646] warns of the threat of U.S. Internet hegemony. Wu writes "The information superhighway is the monopoly of the developed countries and is not a level playing field for competition among the countries of the world. The Internet will strike a terrible blow to the cultures of the developing world. ... Will the information superhighway divide society into the information-rich and the information-poor? How will the information superhighway change society?" (p. 83 - 84). Wu refers to two Spring 1998 talks by President Jiang Zemin which stressed the importance of the knowledge economy.

Wu also decries the "gene colonialism" of foreign pharmaceutical companies who he claims want to replay the history of 19th Century colonialism in China and other developing countries. While Wu raises some important issues, he rarely refers to markets. He calls for more government intervention and marshalling the "superiorities of our political and economic system" to concentrate resources on specific problems. The tone of Wu's bestselling book differs from several other knowledge economy books which are full of "best practice" examples from Chinese and foreign business and government on how high tech can boost economic growth.

## *Background: A Generation Gap Among Chinese Economists*

A Chinese economist commented recently that "Every ten writers have eleven interpretations of the "knowledge economy". Economists in the USA and elsewhere agree that we are in a new kind of economy, but there is no agreement on exactly what it means. Much of the "knowledge economy" debate arises from the idea in Marxist economics of the "organizing the relations of production". The "productivity" concept of market economics is quite different from the Marxist concept. This difference makes for a big generation gap among Chinese economists. Proponents of the "knowledge economy" have the ear of President Jiang Zemin so official publications such as People's Daily have rejected articles by economists with differing views. Market economists are lying low in the "knowledge economy" debate for the moment, said the economist.

## *ChinaNet Plans: Expand to 360 Cities, Connect 2 Million Users by Late 1999*

According to an October 6 Beijing Evening News article, the Chinese branch of the Internet now links 1.2 million of the 20 million computers in China. Since most of these are individual users, "the web in China was recently criticized in [the Shanghai newspaper] Wenhui Bao which said that "the Internet in China is just a media gimmick and a toy for enthusiasts who have gotten way too carried away". ChinaNet, the China Telecom Internet ISP, eventually plans to link over 1 million party and government organizations and enterprises to the Internet along with two million individual users to its Internet service. China's national telecommunications system is already second in size only to the U.S. system. The Internet has become faster rapidly increasing use because of even faster telecommunications infrastructure upgrades. More than 80 percent of China's communications backbone and 40 percent of its urban networks use fiber optic cable. A 2700 kilometer fiber optic cable terminating in Lhasa, Tibetan Autonomous Region opened earlier in 1998 is a great

improvement over the Lhasa - Chengdu satellite link. Industry observers say that Chinese fiber optic networks use the latest technology and protection mechanisms. China is one of the first countries outside the U.S. to have started large-scale deployment of digital wave division multiplexing systems.

## *Chinese Language Content Increasing Rapidly, Daytime Better But Still Slow*

Chinese-language search engines such as those on the Sohoo search engine (http://www.sohoo.com.cn/) and Yahoo! Chinese (reachable from the bottom of the http://www.yahoo.com/ web page at http://gbchinese.yahoo.com/) help people find Chinese language information on the web. Many Chinese newspapers including People's Daily (http://www.peopledaily.com.cn/) and the outspoken Guangdong Communist Party newspaper Southern Weekend (Nanfang Zhoumou) (http://www.nanfangdaily.com.cn/ZM), and Science and Technology Daily (Keji Ribao) (http://www.stdaily.com.cn/) are on the Internet. Chinese domestic net upgrades have cut the time needed to pull up web pages on the PRC branch of Internet. Daytime access to the Internet in China is still often slow, on the order of several hundred bits per second or less. Connections among the five branches of Chinese Internet are often slower than connections to foreign websites since the interconnection pathways between the Chinese networks are often quite narrow.

## *Technology Outpaces Regulations*

Attractive new services such as direct dial-up access without prior registration for telephone subscribers and new technologies such as cheap international Internet telephone service at one-tenth the cost of a conventional telephone call challenge Chinese regulators. Just as in the U.S., the pace of technology outruns regulations. Chinese policymakers often take a prudent wait-and-see attitude. A Ministry of Information Industry official said recently how the U.S. planned to deal with the "problem" of Internet Protocol telephony. A Chinanet manager, when asked if access to the Internet without registration was in compliance with Chinese government regulations which require registration of all net users, manager replied, "We can trace the telephone call and find out who sent the message that way". [Comment: Often Internet cafes do not ask their customers to register to use a computer. This regulation, like many PRC government orders, may be just fading away without being formally revised. End comment.]

Increasing numbers of Chinese now use Internet telephone from their PC through such providers as Net2Phone (http://www.net2phone.com/) to call the United States and other countries for between 10 and 30 cents per minute. In a slightly different service (phone-to-phone Internet telephone vs. PC-to-phone Internet telephone). Some Internet service providers offer telephone cards which enable Chinese users to call a Chinese telephone number and be connected through the Internet to a telephone number in the United States (USD 0.80 per minute) or another country. Internet telephone is apparently eroding the China Telecom monopoly on international telephone calls.

The China Telecom monopoly is also being eroded by the many large "private" networks run by large government agencies. These are major users of satellite commuications in China.

A China Telecom executive said that while the ISP can transmit data internationally, regulations do not permit them to transmit voice or fax messages internationally. When told that several Chinese ISPs were offering international voice telephony services now, the official replied that the ISPs could probably get away with it as long as they did not advertise. However, executives at two independent ISPs said that they did indeed have authorization to offer international voice telephony over the Internet. [Comment: One reason for this confusion is the common Chinese approach to maximize flexibility in regulations: never stipulate in detail and leave rooom for different interpretations or even denial. End comment]

## *Political Security: A Closed or an Open Internet - The Great Red Firewall of China*

For several years, PRC Public Security has blocked a few dozen foreign websites which carry objectionable material by stopping connect requests at the five major Internet entry points (for example the academic network control center at Qinghua University) in China. [Note: The full Chinese text of many PRC Internet regulations are available at http://www.edu.cn/law/. End note] Public security sends the current list of objectionable sites to the entry points periodically so foreign newspapers or other sites sometimes go on and off the list several times. Chinese officials are well aware that the blocking is neither complete nor insurmountable, but rely on the fact that most people will not actively seek out objectionable material against government wishes. Some Chinese citizens have said that they would not visit the Embassy website (unblocked and also available on the domestic Chinese network at http://www.usembassy-china.org.cn/) because officials might frown on visits there.

Blocking websites is also not effective because:

Email is generally unaffected by blocking. Chinese language e-mail magazines such as the Huaxia Digest distributed by China News Digest (http://www.cnd.org/) and other organizations are received by thousands of Chinese. News items e-mailed by the Voice of America since early this year are similarly unaffected by net blocks. Dissident organizations outside China collect thousands of Email addresses and send them to Chinese netters. One academic said that Chinese are not held responsible for undesirable material that shows up in their e-mail mailbox but might incur a penalty for sending it along to other people.

Search engines make it easy to find unblocked websites with the material of interest. It is impossible to block them all. The Chinese language version of Yahoo indexes Chinese language pages in Hong Kong, Taiwan, the United States and elsewhere, making the hunt for forbidden information easier for people who do not speak English.

Proxy servers relay material from blocked websites to web browsers inside China's Great Red Firewall. Many Chinese net users understand how to use a proxy server). A recent visit to a PRC search engine that lists the most frequently used search words showed that the words "proxy", and "free proxy" were among the most popular search words. If a proxy is blocked, a user can use a search engine to find a new unblocked proxy server. More and more Chinese users are learning how to access blocked foreign web sites such as China News Digest, the New York Times, and the VOA home page (http://www.voa.gov/). The U.S. State Department home page (http://www.dos.gov/) is not blocked, however.

Enforcement agencies such as the Public Security Bureau appear to lack sufficient technically competent people to monitor the situation.

## *Providing Internet Content and Technical Services: Opportunity for U.S. Companies*

Internet content providers such as Internet Technologies China (ITC), which created the Sohoo search engine in February 1998, earn money through advertising and other services. ITC was founded by several large U.S. investors, including some connected to the Massachusetts Institute of Technology. Several U.S. hardware companies such as Cisco Systems have important market shares in the China Internet market. Technical services, consulting and providing content is open to foreigners while actual operation of a network in China is forbidden to them. Very broadly worded electronic publishing laws apply to website content as well as to materials published on CD-ROMs. Drawing a distinction between operating a network and providing content is sometimes difficult.

## *On line Cram Schools: A Vast Market*

Value-added services may help some companies make more money on the Internet. According to a September 1998 Chinese press reports, online schools have appeared in Beijing, Xi'an, Changsha, Guangzhou and other large and medium sized cities to supplement regular class work and prepare for exams. In Beijing alone five thousand students are attending cram schools online. Some ISPs also offer online courses on computer or software use. Parents are spending large amounts of money (over USD 1000) to buy a computer, pay Internet access charges and on-line tuition for their children. On-line cram schools offer high school and college preparatory courses to a vast market of parents anxious to help their children get into a good school. These schools might charge 60 RMB per course per month or about 1000 RMB (about USD 120) per course per year. Chinese universities do not offer on-line courses but Qinghua University and Zhejiang University (now China's largest university) offer distance learning courses via satellite TV to candidates for MA and PhD degrees in faraway cities to complement the broadcast university courses for undergraduates offered by Central Television.

The image of computers as educational tools and the one child policy are also factors driving PC sales in China, which are expected to exceed four million in 1998. [Comment: Many parents are eager to invest in their child's education to increase their chances of gaining admission to a good high school or university. Unlike U.S. schools, which also take grades into consideration, success on the entrance examination determines a student's fate. Students and parents are under tremendous pressure. Sometimes money can bridge the gap. For example, students who fall just a few points short of admission to some of the very best high schools in Beijing and other major cities can get in after paying several tens of thousands of Renminbi (several thousand USD). A university professor said recently that about ten percent of the students in the entering classes of the best high schools in Beijing gets admitted this way. Under such conditions, online cram schools are finding many students. End comment]

## *Famous Beijing High Schools Offer On-line Courses*

The official emphasis on high tech education can be seen in new regulations requiring high schools to provide a certain number of hours of computer instruction per week. Although government efforts to set up distance education are limited by the financial strength of local governments, money does not seem to be a big constraint in the private sector. Some online Chinese schools are online only (for example the Guolian School at http://www.lune.com.cn/) but most are extensions of conventional schools, such as Beijing High School No. 5, which is famous can for sending large numbers of students on to university. Some PRC online schools can be found on the Sohoo web site at http://www.sohoo.com.cn/Education/Middle/index.html

## *Beijing Educators on Student-Centered Online Education*

Wu Changxun, principal of the Beijing High School No. 5 told Guangming Ribao (in an article published on October 27) that the online schools are changing the traditional relationship between teachers and students. Education is not just funneling information from teacher to students; online dialogues with the teacher and the large amount of online resources are creating a different kind of education more similar to the U.S. model said Wu. Zhang Hongbo, of the Beijing Education Academy Information Center, said that online education evens out educational opportunity, eliminates constraints of time and space, and changes education from a teacher-centered to a student-centered activity. Chinese Academy of Social Sciences researcher Bu Wei said that although China began computer-assisted education in the late 1970s, computer-assisted education is still simply duplicates classroom education. What is needed, said Bu, is not more technology but new educational concepts that will make online education a truly child-centered kind of education. [Note: Bu Wei will participate in the International Visitor program during this fiscal year. End note].

## *Newspaper Websites, Leader Speeches Delivered to Computer By Central TV*

The contents of Chinese newspaper websites along with some unpublished speeches by Chinese leaders are now broadcast on a subcarrier of Chinese Central Television's educational channel. The TV signal reaches a computer plug-in card either from a TV antenna cable or a cable TV cable. A tongshi [STC: 6639 6018] card, which converts the subcarrier signal back into HTML webpages and stores it on a computer hard disk, sells for 1600 RMB (about USD 200). This information service is free. ESTOFF saw this system operating in a computer shop in Taiyuan, Shanxi Province in September. The computer user need only browse webpages from the hard disk. This is much more convenient and far faster than the usual sluggish pace of PRC website downloads during peak hours.

## *Comment: How Will Net Growth Change Chinese Society?*

The quality of information on the net is what makes the net valuable. Although China continues to become more open, unnecessary secrecy is still a major obstacle to the development of the Internet. The quality, not the quantity of information, determines the value of the Internet. A scientist who participated in the planning of the Beijing City and central government Intranet said that the reluctance

of organizations to share important information online has been the greatest obstacle to the success of the network. A large amount of basic information, on government policies, social conditions, the economy, the environment, and even certain regulations is confined to "internal distribution only" channels. The very poor quality of statistical information in China compounds this problem.

Information flows in China are limited in other ways such as press censorship and the frequent failure of government as well as private citizens to adhere to official rules and regulations. The poor horizontal and vertical coordination and communication between organizations sharply reduce overall work efficiency, the quantity and reliability of information at the center about local conditions and the enforcement of regulations. Examples include problems in converting scientific advances into industrial technology and spreading successful technologies throughout China. Chinese officials talk about the importance of transferring technology from foreign countries. Perhaps a greater problem (and usually overlooked) is the need to improve transfer technology within China.

Chinese analyses of the prospects for Chinese science and technology such as "Science and Education for a Prosperous China" have pointed to poor communications between organizations as a critical weakness for China. The report, based on the May 1995 PRC National Science and Technology Conference was edited by the present Science Minister. A summary of this very frank discussion of Chinese science and technology challenges and prospects is available on the Embassy Beijing EST web page at

http://www.usembassy-china.gov/english/sandt/index.html

The Internet may be able to help solve the critical Chinese weakness, in science and technology as well as in many other sectors of society, of poor communication and cooperation between people in different work units, different ministries and up and down hierarchies.

## *Freer Information and More Open Minds*

A Chinese official commented recently that he greatly admires the U.S. freedom of information laws. The official noted, "if China's Tax Bureau, put its regulations on their web page they would be much easier to deal with." This simple idea of the virtue of free information flows is spreading. The Chinese language Internet is now making available a rich range of information to complement the rising quality of information in PRC newspapers, books and magazines, and playing an ever more important part in the opening of Chinese minds.

## *Valuable Information, Helpful Search Engines: A Boon to China Scholars*

[Note: The Chinese branch of Internet has become a valuable information source. Scholars of things Chinese will find it helpful to learn how to use a Chinese language search engine. For example, recently ESTOFF did a search on the name of He Qinglian, author of the bestseller "Pitfalls of Modernization" [Xiandaihua zhi xianjing] published in March 1998 as part of the "China's Problems" series by Today's China Publishing House [Jinri Zhongguo Chubanshe]. Although a search on Sohoo

didn't bring anything up, a search on the Chinese version of Yahoo! [http:gbchinese.yahoo.com] brought up a dozen book reviews and articles about the book from websites in Guangdong Province, Hong Kong and Taiwan. Online articles from the websites of many Chinese newspapers and magazines provide current information on many important topics such as the response of Chinese government and business to the Year 2000 bug Y2K problem. Several government ministries now have websites which include photos, organization charts, key regulations and recent press releases. End note.]

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# Appendix One -- Chinese Search Engines and Web Sites

A list of Chinese-language search engines is available on the Chinese Yahoo web site at
http://gbchinese.yahoo.com/Computers_and
Internet/World_Wide_Web/Searching_the_Web/Search_Engines
and from Sohoo at http://www.sohoo.com.cn/Computer/Internet/Search/index.html

These links include lists of Chinese ISPs, Internet content providers (ICPs), news websites, and individual web pages.

Sohoo in addition to its search engines and items from the Chinese press also invites visitors to the websites to offer their opinions on topics such as the new draft marriage law and political controversies in the U.S.

A very comprehensive list of Chinese language websites in the PRC, Hong Kong, Taiwan and elsewhere. http://www.aweto.com/china and especially the section on the Internet in China at http://www.aweto.com/china/chinanet.html.

The China Matrix (http://www.virtualchina.com/matrix/) describes the Chinese branch of the Internet and provides a list of relevant newsgroups, mailing lists, webbed documents and experts.

Some interesting entry points to the PRC web are collected on the U.S. Embassy Beijing web page at http://www.usembassy-china.gov/english/sandt/Sandchw.htm

Several 1997 reports on the Internet in China are available on the Embassy Beijing EST webpage at http://www.usembassy-china.gov/english/sandt/index.html

Several dozen Chinese language scientific and technical publications are available in full text off the Chinese government's Chinainfo web site at http://www.chinainfo.gov.cn/

Chinese minority language material is just starting to appear on the Internet. Inner Mongolia University has some online materials in Mongolian at http://www.imu.edu.cn

Now that a 2754 km. long cable running linking Xining, Pingan, Naqu, Lhasa and other cities in

Qinghai Province and the Tibetan Autonomous Region to Gansu and eastern China has officially opened, perhaps the Tibetan language will be also appear more frequently online.

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## *Appendix Two: June 1998 Internet Survey by the China Internet Information Center*

Summary of the results of a survey conducted by the State Council Information Office and the Chinese National Network Information Center (CNNIC). 2494 of 3098 surveys were returned. Respondents were 92.8 percent male, 7.2 percent female. There surveys are released every January and July. The survey was published in the Renmin Youdian newspaper on July 16, 1998.

- *China has 542,000 computers connected to the Internet. 82,000 are directly connected while 460,000 have dial-up connections.*
- *China has 1.175 million Internet accounts of which 325,000 are directly connected to the net and 850,000 have dial-up connections.*

### Chinese Domain Names

- AC 363
- COM 6559
- EDU 414
- GOV 561
- NET 657
- ORG 229
- (AADN) administrative area domain names 632
- Total 9415

*China has about 3700 websites*

*The total capacity of China's international Internet circuits is 84.6 Mbps including direct connections to the USA, Germany, Japan and Hong Kong.*

### Connections and Bandwidths:

- CSTNET 2.128 Mbits/s
- CHINANET 78 Mbits/s
- CERNET 2.256 Mbits/s
- CHINABGN 2.256 Mbits/s for a total of 84.64 Mbits/s

### The proportions of different types of information carried by Internet circuits in China:

- FTP 7.2 percent
- Telnet 0.8 percent
- Email 9.1 percent

- WWW 82.2 percent
- Other 0.7 percent

## Age breakdown (percent in each age group)

| 15 or under | 16 - 20 | 21 -25 | 26 - 30 | 31 - 35 | 35 - 40 | 41 - 50 | 50 or over |
|---|---|---|---|---|---|---|---|
| 4 | 7.9 | 39.9 | 28.6 | 10.7 | 4.2 | 3.5 | 1.2 |

Areas with the highest proportion of respondents were Beijing (25.3 percent), Guangdong (11.5 percent), Shanghai (7.8 percent), Jiangsu (6.1 percent), Hubei (4.1 percent), Shandong (4 percent), Henan (3.4 percent), Fujian (3.1 percent), Hebei (2.7 percent) and Tianjin (2.4 percent).

## Net users by Occupation:

- Science and Technology, 12 percent
- Education 7 percent
- Party or government 10.3 percent
- Manufacturing or mining 11.3 percent
- Computer industry 18.8 percent
  Posts and Telecommunications 8.6 percent
- Student 13.9 percent
- Finance and insurance 4.8 percent.

## Net users by monthly income in renminbi (percent in each income group:

| 400 or less | 400 - 1000 | 1000 - 2000 | 2000 - 5000 | over 5000 |
|---|---|---|---|---|
| 9.7 | 39.9 | 32.4 | 14.4 | 3.6 |

## How much time do users spend on the net each month? (percent in each group)

| One hour or less | 1 - 5 hours | 5 - 10 hours | over 10 hours |
|---|---|---|---|
| 7.1 | 25.3 | 26.7 | 40.9 |

## What kind of information do users want from the net? (percent in each group)

- Scientific and technical information 67.2 pct

- Entertainment and sports 63.3 pct
- Political and economic news 45.1 pct
- Business information 43.7 percent
- Finance, stocks and bonds 26.1 percent
- Advertisements 15.2 pct.

## What are the most serious drawbacks of the Internet?

- Net access fees are too high 61.2 percent
- Net speed is too slow 88.9 percent
- Too little Chinese language information 45.5 percent
- Poor service from the Internet service provider 15.8
- The net is useless 1.9 percent

## Other Concerns:

- Want to buy things online 78.1 percent
- Don't want to buy things online 21.9 percent
- Legal protection for online purchases is needed 62 percent
- There is no reliable way to transfer funds online 44.5 percent
- Concern that the quality of goods bought online would be poor 46.1 percent
- Buying things online is convenient 23.4 percent
- Product information is easy to find online 26.1 percent
- ISP solves problems in a timely manner 38.4 percent
- ISP is fine when you sign up, but later not helpful 55 percent

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## Appendix Three -- "The Knowledge-Based Economy"
*People's Daily October 10, 1998, p. 5. "The Challenge of the Knowledge Economy"*

*Summary*: The increasing importance of the high tech knowledge economy to economic growth is accentuating income disparities within countries. Science and technology, by accelerating the growth of the economies of the developed countries, are making it harder and harder for the developing countries to catch up. Deng Xiaoping set the long term goal of China to reach the level of an average developed country. This is a difficult task since the goal is a moving target. China's socialist market economy has still not escaped the bonds of the traditional economy in which growth comes at the cost of expanding scarce natural resources and creating pollution. The tertiary sector and service-intensive exports are still only a small part of the Chinese economy. Not all of China lags so far behind: the coastal areas, but not the interior, have the potential to develop a knowledge economy.