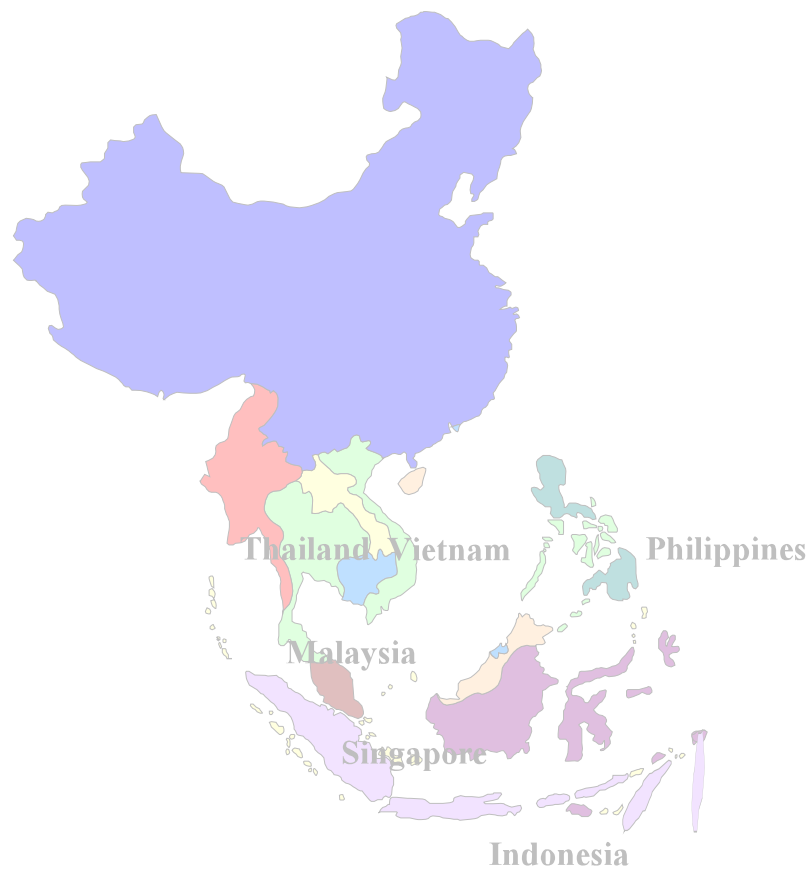


**Information Communications Technology
Country Snapshots
Selected Southeast Asian Countries**

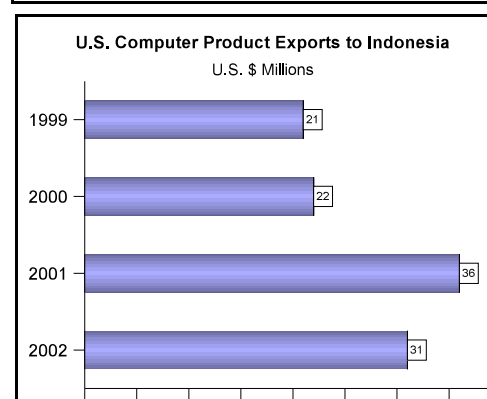
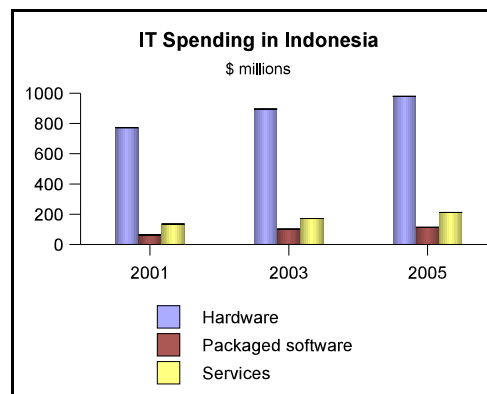


Information Technology Industries
Office of Information Technologies and Electronic Commerce
November 2003

INFORMATION COMMUNICATIONS TECHNOLOGY INDONESIA

Statistical Snapshot

Population (millions)	234.9 (mid-2003)
Adult literacy rate	88.5 (%)
Personal computers (per 1,000 people)	11 (2001)
Internet service providers	60 (2001)
Internet users	4,000,000 (2001)
Telephone mainlines	7,218,900 (2001)
Mobile phones	11,100,000 (2002)
Television sets (per 1,000)	153 (2001)
Cable subscribers	0.3 (2001)
Radios (per 1,000)	159 (2001)
E-commerce readiness	3.3 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$1,167 (2002)



ICT: The demand for IT products and services in Indonesia grew a robust 20 percent in 2002 to exceed \$1.1 billion, but remains one of the smallest in the region, according to International Data Corporation (IDC). Hardware sales accounted for more than 75 percent of its IT total. Gartner Asia Pacific estimated that sales of personal computers (PCs) reached 495,000 units in 2002, with sales expected to grow modestly over the next few years. Indonesia's computer business association projects computer sales to grow in the 20 percent range in 2003. The top PC vendors include Acer (Taiwan), Hewlett Packard, IBM, and locally assembled PCs from Zyrex and Mugen. Most local PC vendors typically use Intel processors (assembled in Malaysia), memories/DRAM mostly from Korea, Taiwan, Japan, and the United States. Motherboards, mice, keyboards, and peripheral cards are sourced from Taiwan and China. Chinese-made PCs, which are considerably cheaper than locally assembled PCs or other imports, have recently entered the market. U.S. computer product exports to Indonesia fell 16 percent in 2002 to \$31 million, after rising for three consecutive years. In terms of software and services, IDC projects the market to grow at double digit rates, but software piracy has caused significant damage to software vendors. The Business Software Alliance reported that pirated software accounted for 89 percent of Indonesia's software market in 2002, causing a revenue loss worth \$138 million to software producers. Indonesia's new copyright law (Law 19/2002) effective July 2003 establishes new guidelines for intellectual property rights, but still lacks effective implementation and follow-up. Meanwhile, the government hopes to achieve \$8 billion in software exports by 2010.

The Internet is not widely used in Indonesia. Less than 4 percent of its population were Internet users in 2002, compared with 8 percent of the citizens in Thailand and 31 percent in Malaysia, according to ITU. NUA, an Internet statistics website put the number of Internet users in Indonesia at 5.2 million in 2002. Over half the users access the web from warnets, Indonesia's version of Internet cafes, while 40 percent access the Internet from the workplace. The Indonesian government plans to increase the number of Internet kiosks across the nation, each with an average of eight PCs, to expand Internet use. Other government efforts to address its ICT needs include Presidential Decree No. 50/2000 that established the National Coordinating Team of ICT (TKTI) to manage the development and use of ICT in all sectors of the government. TKTI unveiled a public-private sector five-year action plan that will run through 2005.

E-Commerce: Indonesia's e-commerce market is in the developing stages and will remain so until impediments such as weak infrastructure and public policies are improved. Indonesia is a cash-based economy with low usage of credit cards. For those that have credit cards, security is a major concern, as credit card fraud is a chronic problem. Also, most online stores will ship only to major locations, such as Jakarta, creating delays in distribution. Recent research showed that most users research product information and browse the Internet for price comparisons before making a purchase using traditional methods. The Boston Consulting Group indicated that 80 percent of the online transactions in Indonesia were through travel-related websites.

Presidential Decree No. 6/2001 endorses the use of ICT in Indonesia. To further strengthen the implementation of this decree, a new Ministry of Communications and Information was established to oversee information technology content and the development of e-government strategies, among other things. The Indonesian government is drafting several pieces of legislation to cover cyber law, electronic signatures and e-transaction law. However, it is not known when these bills will be presented to parliament for approval.

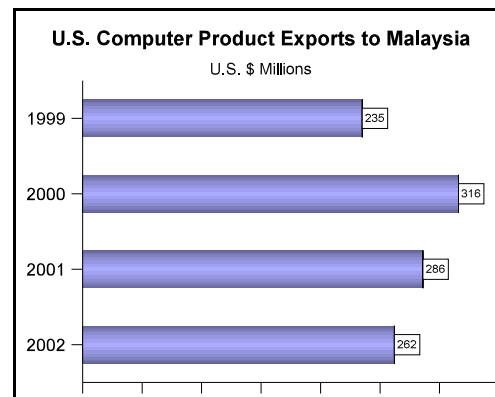
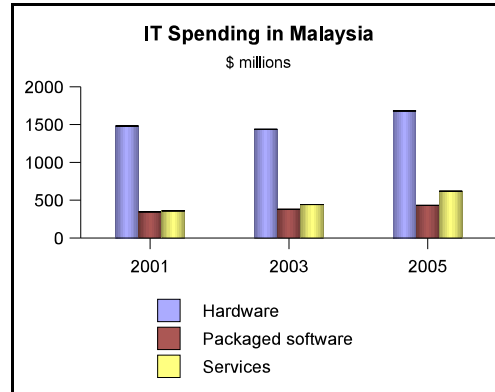
Telecommunications: Indonesia suffers from one of the lowest teledensities in the world, with only 3-4 percent of its population with mainline telephone service. Pyramid Research estimates the number of mainlines at 7.8 million in 2002. The Indonesia Government started to liberalize the once tightly controlled telecommunications sector with the introduction of Telecommunications Law No.6 /99 (effective in September 2000), as amended by the Blue Print on Telecommunications Development, and Presidential Decree No. 6/2001 to create a framework for fair and open competition in all telecom sectors. The reforms terminated the exclusive rights of PT Telkom and PT Indosat for local fixed lines, domestic long distance, and international long distance service in the 2002-2003 period, allowing private and foreign telecommunications companies to enter the market.

The fast growth of the cellular phone market could provide a means for Indonesia to leapfrog traditional telephony to meet demand for ICT. The number of mobile phone subscribers nearly doubled from 5.9 million in 2001 to 11.1 million in 2002 to surpassed the number of fixed line telephones, according to Pyramid Research. Of these, 40 percent of users are based in the Greater Jakarta area. In October 2003, the GOI awarded Indonesia's first 3G mobile service license to Cyber Access Communications. The company is required to begin service within three years. The Indonesian Cellular Phone Provider Association advocates for a cheaper technology, like fixed-wireless services, to serve middle and low income subscribers, most of whom are only interested in voice services.

INFORMATION COMMUNICATIONS TECHNOLOGY MALAYSIA

Statistical Snapshot

Population (millions)	23.1 (mid-2003)
Adult literacy rate	88.4 (%)
Personal computers (per 1,000 people)	126 (2001)
Internet service providers	6 (2001)
Internet users	6,500,000 (2002)
Telephone mainlines	4,600,000 (2001)
Mobile phones	7,200,000 (2001)
Television sets (per 1,000)	201 (2001)
Cable subscribers	0
Radios (per 1,000)	420 (2001)
E-commerce readiness	5.6 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$2,170 (2002)



ICT: Malaysia's IT market reached \$2.2 billion in 2002, with hardware sales accounting for 65 percent of the total. The market is forecast to grow at an average annual rate of 8 percent to reach \$2.7 billion by 2005, according to the International Data Corporation. The growing need for computer skills are expected to boost demand for personal computers (PCs), causing multinational vendors to develop bundles at various price points since PCs can be as much as 20 percent of take home pay. The "white-box" market in Malaysia is strong and accounts for about one-third of desktop PCs sold there. Sales of mobile PCs, currently 26 percent of the total PC market, are expected to grow significantly, according to the Gartner Group. To help stimulate growth, the Ministry of Education is purchasing up to 50,000 mobile PCs for math and science teachers nationwide. Malaysia's PC penetration rate reached close to 13 percent; its Internet penetration was estimated at 31 percent, with 6.5 million users in 2002. Growth of the Internet in Malaysia is impeded by the high cost of bandwidth and computer equipment.

The Malaysian Government takes an active role in supporting the development of the Internet and associated high technology industries. The 8th Malaysian Plan (2001-2005) of economic development and the Communications and Multimedia Acts both focus on increasing technical skills, promoting Internet usage and nurturing the development of small and medium-sized enterprises. Attention is also focused on creating a competitive market environment by minimizing licensing requirements for Internet and wireless technologies.

While the U.S. currently dominates the hardware and software market in Malaysia, their higher product costs will become a competitive disadvantage as European, Japanese, and Chinese firms increase their presence. Despite a weaker competitive position, U.S. firms rank second as a source of imports of computers and peripheral equipment. U.S. computer product exports were \$262 million in 2002. Malaysia has developed a strong manufacturing base for computers, parts, semiconductors and integrated circuits; as well as a developed telecommunications system in deploying modern technologies such as optic fibers and satellites. However, the industry still faces a shortage of trained and skilled IT personnel including LAN administrators, hardware and software engineers, and technical support personnel. A goal of the 8th Malaysian Plan is to install 8,000 primary and secondary schools with computer facilities. The Malaysian government will also provide tax incentives to companies to reduce the cost of technical training.

E-Commerce: The Malaysian Government passed legislation that supports the development of the Internet and electronic commerce. The Malaysian Communications and Multimedia Commission (MCMC), established in 1998 is the regulatory body overseeing the communications and multimedia industry. The Multimedia Convergence Bill, passed in 1998, recognizes the convergence of computing, telecommunications, and broadcasting technologies. The Digital Signature Act, effective October 1998, recognizes the legal status of electronic signatures. In addition, to date, electronic commerce transactions are not taxed in Malaysia. The Malaysia Government is also in the process of developing a draft data privacy law. It is expected to be transmitted to the Parliament for consideration early in 2005.

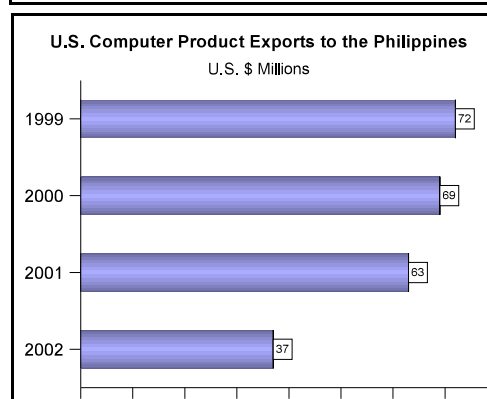
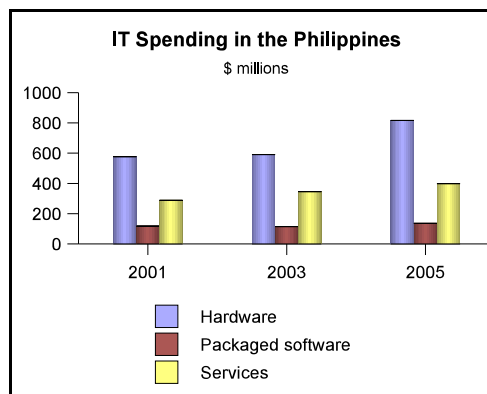
Industry research groups, like IDC predict that Internet commerce in Malaysia will rise from \$87 million in 1999 to exceed \$5 billion in 2004. However, reports from Ernst & Young and Yankee Group are more cautious about the acceleration of e-businesses like online payment, online trading and online shopping. Even growth in the business-to-business (B2B) side of e-commerce has been slow to take off due to concerns about security. Internet users are also reluctant to shop online because of high shipping and handling charges. This is compounded by a shopping culture that relies on physical touch and feel of the merchandise.

Telecommunications: Malaysia has one of the more advanced telecommunications infrastructures among the ASEAN countries, using fiber optics, satellite, and wireless transmission technologies. However, regional differences in terms of access to service with fixed line telephone penetration exists with rates of 23 percent in urban areas and 12 percent in rural areas. The state-owned Telekom Malaysia, the major telecom company providing fixed line service, currently owns more than 90 percent of the public switched telephone line network, according to the MCMC. The robust growth of subscribers in the mobile or hand phone segment surpassed fixed lines in 2001. Service providers estimated that mobile subscribers rose from 5 million in 2000 to over 7 million during the first three quarters of 2001. Industry reports estimate mobile subscribers will reach 9 million in 2003. Five companies are licensed to provide mobile telephone service in Malaysia. Growth opportunities are primarily in mobile telecommunications such as Third Generation (3G) Spectrum and Broadband Fixed Wireless Access. The MCMC awarded two spectrum blocks for the implementation of 3G services. Telekom Malaysia Berhad and Maxis Communications' subsidiary, UMTS each plan to spend \$1 billion and \$921 million, respectively over the next several years on their 3G rollout. Both companies plan to launch their pilot 3G products in 2004.

INFORMATION COMMUNICATIONS TECHNOLOGY PHILIPPINES

Statistical Snapshot

Population (millions)	84.6 (mid-2003)
Adult literacy rate	95.9 (%)
Personal computers (per 1,000 people)	22 (2001)
Internet service providers	51 (2001)
Internet users	2,000,000 (2001)
Telephone mainlines	6,980,000 (2001)
Mobile phones	18,000,000 (2002)
Television sets (per 1,000)	173 (2001)
Cable subscribers	13.1 (2001)
Radios (per 1,000)	161 (2001)
E-commerce readiness	3.9 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$960 (2002)



ICT: The demand for IT products and services in the Philippines slowed in 2002, dropping 2 percent to \$960 million, according to the International Data Corporation. The sluggish demand was evident as U.S. computer product exports to the Philippines fell for four consecutive years, and dropped 41 percent to \$37 million in 2002. The personal computer (PC) penetration rate remains low, with only about 2 percent of the population owning PCs. Industry sources indicate that 80 percent of businesses own computers, with the financial sector being the heaviest users of IT products and services. The IT market is also driven by the continued campaign of the Philippine government to make the country a regional center for outsourcing ICT services. Recent statistics indicate that about 20,000 call center “seats” are operating in IT parks that cater primarily to the U.S. market.

With only 2 million Internet users, the Philippines ranks among the lowest levels in Asia. High Internet costs limits access for small and medium-sized companies, as well as students and home users. To compensate for low penetration rates, Internet cafes, estimated to be as many as 5,000, allow users to gain Internet access at an affordable price. Low cost prepaid cards is another way to access the Internet and avoid the payment of recurring monthly telephone fees and Internet subscriptions. According to Asia Market Intelligence, about one-third of the Internet users access the Internet using cyber cafes, one-fourth use connections in schools, and another one-fourth in the workplace. The number of ISPs reached 51 in 2001, according to the ITU. Infocom, the largest ISP, owned by Philippine Long Distance Telephone Company, has a direct fiber optic link and offers high speed cable Internet access.

Although the Philippines have not established a Ministry of Information Technology, it realizes the critical role of ICT and has undertaken initiatives to improve its situation. In an attempt to accelerate the progress, the National Information Technology Council and Electronic Commerce Council (ITECC), a joint government-private sector group, coordinate policy making functions to accelerate the development of e-commerce. The Council is chaired by the president of the Philippines, with members composed of ten government cabinet secretaries and eight chief executive officers. In addition, the Government Information Systems Plan, adopted in 2000 required government agencies to computerize and implement e-governance services. More than 250 government agencies connect to the Internet with websites offering information and services to the general public. The Medium Term Philippine Development Plan or Angat Pinoy 2004 aims to encourage investment in education, science and technology and to promote the role of ICT to raise productivity. Meanwhile, the National Telecommunications Commission (NTC) has prepared guidelines to facilitate the deployment and development of wireless Internet in the Philippines. Features of the guidelines include lifting of the suspension on the 2.4GHz spectrum and proposes to allow over-the-counter sale of approved indoor equipment by registered dealers.

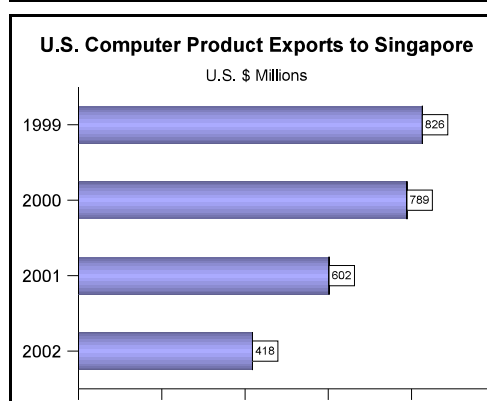
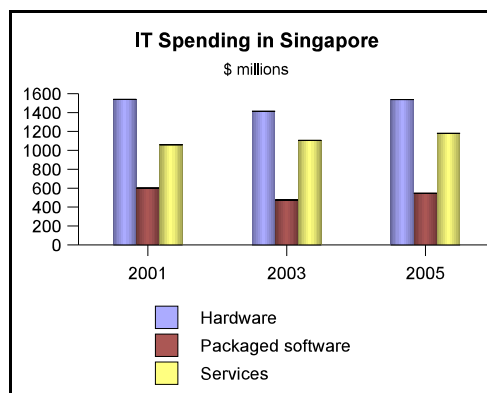
E-Commerce: Philippine e-commerce is in its infancy, with less than 5 percent of businesses online, according to the Economist Intelligence Unit (EIU). Online banking services are limited at domestic banks and most use the Internet only to advertise their products and services. While B2B commerce is minuscule compared with business volume in other countries in the region, multinationals and several large companies have started Internet businesses and smaller companies are moving toward readiness. A few B2C companies accept cash-only payments, but overall success for these firms is hampered by low PC penetration, few credit-card holders, and an unreliable distribution system. Automatic teller machines (ATM), however, are established in the Philippines. Companies are exploring ways to use ATMs as a viable payment option for the 14 million ATM cardholders. Yehey.com, one of the popular portals in the Philippines has developed PayPlus+, the first ATM-consortium-based payment gateway in the world. In 2000, the Electronic Commerce Law took effect that sets a legal framework for online transactions conducted in the country, and is intended to improve overall e-government services for processing legal documents like permits and licenses. The law addresses electronic signatures, legal validity of electronic documents in courts, and networks and infrastructure security with stiff penalties to deter cyber crimes.

Telecommunications: The deregulation of the telecommunications industry in the early 1990s opened the market and began to improve the poor quality and inadequate telecommunications infrastructure in the Philippines. Fixed telephone mainlines rose from less than 1 million prior to the new policies in 1993 to close to 7 million in 2002. Despite this growth and measures to deregulate the market, the lack of competition has prevented overall improvement in the quality of its telecom infrastructure, leaving about half of all Philippine towns and cities without access to telephone service. The fixed wireline population was stagnant in 2002 due to the fast-growing adoption of wireless applications. The number of mobile phone subscribers rose sharply in recent years from 1.3 million in 1997 to 18 million in 2002, according to EIU. The total number of subscribers is projected to reach 25 million by the end of 2004. The Philippines are reportedly the world leader in the Short Messaging Service (SMS) cellular phone market with Globe Telecom and Smart Telecom handling more than 200 million messages per day. Carriers will also focus on providing cell sites outside Metro Manila, particularly to those not covered by fixed telecom services. Text messaging and other wireless applications are popular in the Philippines because it is much cheaper than actual cellular telephone calls.

INFORMATION COMMUNICATIONS TECHNOLOGY SINGAPORE

Statistical Snapshot

Population (millions)	4.6 (mid-2003)
Adult literacy rate	92.9 (%)
Personal computers (per 1,000 people)	508 (2001)
Internet service providers	42 (2001)
Internet users	2,310,000 (2002)
Telephone mainlines	1,950,000 (2000)
Mobile phones	3,300,000 (2003)
Television sets (per 1,000)	300 (2001)
Cable subscribers	73.1
Radios (per 1,000)	672 (2001)
E-commerce readiness	8.2 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$3,040 (2002)



ICT: Singapore is an important business and information technology center for the Asian region, with one of the most advanced ICT infrastructures in the world. The country's small size, the high national income, and the government's commitment to transform the country into a global capital of information and communication technology by 2010, contribute to its success. Singapore ranked 12th in the world and 3rd among Asian countries in the Economist Intelligence Unit's E-readiness Index; a measure of overall connectivity, government strategies, laws and policies supporting ICT growth. Singapore's nationwide high-speed Internet backbone, "Singapore ONE," is linked by 186,000 miles of optical fiber that connects offices, homes and schools. The Infocomm Development Authority of Singapore (IDA) reported that 64 percent of households own PCs and half of the homes have access to the Internet. Most schools and public libraries are also equipped with PCs with broadband access. In the private sector, 91 percent of the top 1,000 companies have Internet access. In 2002, Internet subscribers exceeded 2.3 million. Its Internet penetration rate of 55 percent, was the second highest in the region after South Korea, according to the International Telecommunication Union (ITU).

According to the International Data Corporation, Singapore's IT market fell 5 percent in 2002 to \$3 billion. A slight dip of 1.5 percent is forecast for 2003 due to the continuing weakness in economic activity worldwide. The lingering impact of SARS in the region will also influence some segments of the industry, as many large organizations are delaying IT spending programs. Both hardware and software sales are forecast to fall 4 percent and 3 percent, respectively; while services are expected to rise 2 percent. Similarly, U.S. exports of computer products to Singapore continued its downward trend, dropping nearly 31 percent in 2002 to \$418 million.

E-Commerce: Singapore laid a strong foundation for vibrant regional and global e-commerce centers by liberalizing telecommunications, building a nationwide broadband network, and creating public IT investment funds. E-commerce continued to gather momentum in Singapore, rising from \$500 million in 2000 to an estimated \$2.2 billion in 2002, according to eMarketer, Inc. Typical e-commerce transactions in Singapore range from business-to-business (B2B) order processing, invoicing and payments; to business-to-consumer (B2C) online shopping, Internet banking and trading. IDC estimates that 80 percent of all e-commerce in Singapore will be B2B, rather than B2C in the coming years. In 2002, Singapore's government agencies offered nearly 90 percent of its services online, and ranked second, after Canada, in studies of electronic government maturity according to a survey conducted by Accenture. In July 2003, the second e-government action plan (eGap II) was launched. Singapore's government will invest more than \$742 million over the next three years to upgrade infrastructure, develop capabilities and further improve electronic government services.

On a bilateral basis, the U.S. and Singapore signed a Free Trade Agreement in May 2003. The "Joint Statement on Electronic Commerce" focuses on maintaining an environment for e-commerce that is free from barriers, including duty-free status of products delivered electronically. The two governments will work to avoid imposing unnecessary regulations and restrictions on e-commerce that would inhibit its growth.

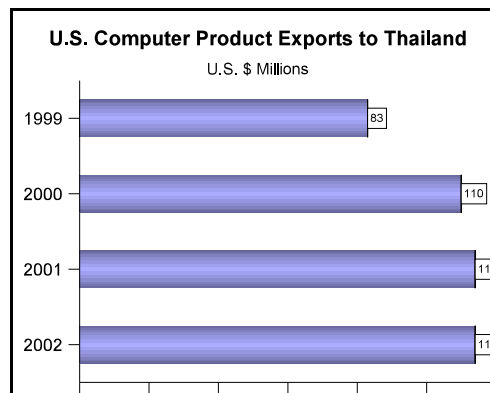
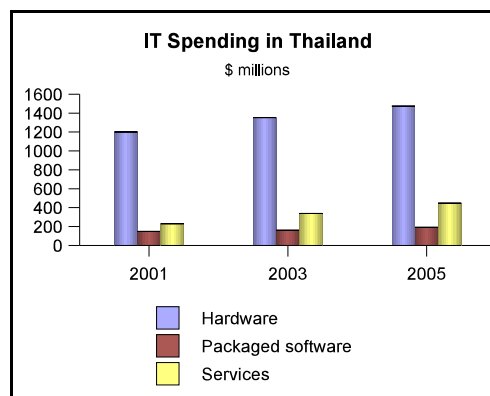
Telecommunications: Singapore's telecom services market is expected to reach \$3.8 billion in end-user spending in 2003, up 11 per cent over 2002, according to a report by IDC. Virtually every home in Singapore has a fixed telephone line. Mobile phone penetration reached an all-time high of 79.7 percent in May 2003, with more than 3.3 million mobile subscribers in a country with a population of less than five million. Singapore's telecom monopoly on basic telephone services ended in 2000 creating both competition and challenges for telecom service providers in most segments of the market. As a leading adopter of new applications and technologies in the region, the deregulated environment opened the door for companies to sell new applications and solutions including fixed line, mobile, Internet telephony, long distance, and mobile data services. Other promising areas include broadband services, Internet protocol virtual private network, and security technologies. In 2002, 34 facilities-based and 636 service-based telecom service operators were licensed to operate in Singapore.

With its high mobile phone penetration rate, Singapore is a prime location for the development and launch of new wireless applications, products and services. In 2001, the IDA awarded 3G licenses to three mobile operators in Singapore. Singapore Telecommunications Limited (SingTel), which is 75 percent government-owned and the market leader, is offering customers a month long free trial to test its 3G services—video calls, video-streaming for faster downloads of video-clips and movie trailers, and high-speed Internet access. The companies are expected to introduce their 3G products and services nationwide by the end of 2004. IDA launched the Singapore Ultra Wideband (UWB) program in 2003. UWB is a wireless technology for transmitting digital data over a wide spectrum of frequency bands. Testing will take place in the TeleTech Science Park.

INFORMATION COMMUNICATIONS TECHNOLOGY THAILAND

Statistical Snapshot

Population (millions)	62.4 (mid-2003)
Adult literacy rate	96 (%)
Personal computers (per 1,000 people)	28 (2001)
Internet service providers	18 (2001)
Internet users	4,800,000 (2002)
Telephone mainlines	5,600,000 (2000)
Mobile phones	3,100,000 (2002)
Television sets (per 1,000)	300 (2002)
Cable subscribers	2.5 (2001)
Radios (per 1,000 people)	235 (2001)
E-commerce readiness	4.2 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$1,713 (2002)



ICT: Thailand's IT market reached \$1.7 billion in 2002, with hardware sales accounting for 74 percent of the total. The market is forecast to grow at an average annual rate of 9 percent to reach \$2.6 billion by 2005, according to the International Data Corporation. Over 60 percent of the personal computers sold in Thailand are locally assembled, using imported components, predominately from the United States. U.S. computer parts exports of \$250 million in 2002 were more than twice the value of finished equipment. The strong price/performance value for low-end and midrange computers from local vendors are making laptops a much more viable option there. Pockets of demand exists within the large enterprise segment (warehouses, sales department) for wireless technology. But, the overall low PC penetration rate, estimated at 2.8 percent of its population in 2001 has slowed Internet use and the growth of e-commerce. The International Telecommunication Union (ITU) estimates Thailand's Internet use at only 8 percent of the population, but the number of Internet users more than doubled from 2.3 million in 2000 to 4.8 million in 2002. Most of Thailand's Internet use occurs in Bangkok and its suburbs, with home and Internet cafes the most common places for use.

Thailand currently faces a shortage of highly skilled IT professionals to operate equipment, and to run Internet, Intranet and e-commerce applications. The government has initiated programs to provide Internet access to schools and organized IT training courses along with universities and the private sector. To stimulate the development of the Thai software industry, the government implemented the Software Park Project to offer educational, business development, marketing and technical support to young software companies.

E-Commerce: E-business in Thailand is influenced by e-commerce transactions of multinational companies. Local corporate users mostly limit their Internet involvement to advertising/promotions rather than sales, and for communications/e-mail and messaging. One constraint is cost—the leasing of Internet lines in Thailand costs six times more than Hong Kong and over twice as much as in Malaysia and the Philippines, according to EIU. Investment costs for new Internet access technologies such as mobile Internet and satellite systems are too expensive for most organizations, including the government sector. As a result, during 2002, nearly 60 percent of Internet use took place through dial-up access. About one-fourth of the business organizations relied on leased line Internet access, according to Thailand's National Electronics and Computer Technology Center (NECTEC). The Communications Authority of Thailand will maintain its international connections monopoly until 2006, so fees are unlikely to fall. Costs incurred by Internet Service Providers are passed on to their customers, resulting in high monthly user fees.

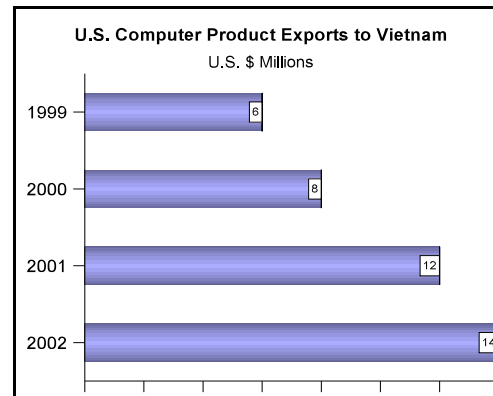
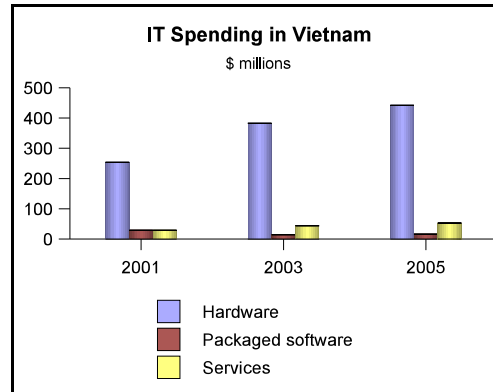
The newly established Ministry of Information and Communication Technology (ICT) announced new policies and development goals. The five goals: e-government, e-commerce, e-industry, e-education, and e-society will provide a framework for stimulating further growth in the IT sector. Legislation controlling electronic transactions have been slow to develop. However, the Electronic Transactions Law and the Electronic Signatures Law were combined to become the Electronic Transactions Act B.E.2544 and took effect April 3, 2002. Other e-commerce-related laws remain on the agenda, or are in the drafting or revision stage, including one on data privacy protection. While several industry sectors such as electronics and tourism are actively implementing e-commerce, and the Thai government is running an e-government pilot project, IDC projects that e-commerce growth will remain slow, with only 15 percent of small and medium-sized enterprises using online sales, procurement, or inventory control.

Telecommunications: One of Thailand's obligations to the World Trade Organization (WTO) is to liberalize the telecom sector by 2006. Currently, the Thai government retains the exclusive right to own and operate the telecommunications infrastructure, although private companies can operate network segments on a concession basis. Thailand's 1997 National Telecommunications Master Plan made provisions for the establishment of a regulatory body, and the 2000 Frequency Allocation Act called for the establishment of a National Telecommunications Commission (NTC) to allocate licenses, spectrum management, and supervise telecommunications operators. Although the NTC was targeted for operation by 2000, it is still being organized, slowing full liberalization of the sector. Roadblocks including tariff-re-balancing and standards delay the deregulation and privatization process. In early 2003, a telecom excise tax was introduced as a step towards eliminating the industry of revenue-sharing schemes that varied widely among companies. Under the excise tax regime, telecom firms will pay 2 percent of their revenue to the Ministry of Finance and mobile operators 10 percent, as a way to level the playing field for all operators. Meanwhile, fixed line telephone connections reached 7.1 million in 2002, according to EIU. Mobile phone usage, estimated at 15 million, is growing. Mobile-phone operators began launching trial wireless application protocol (WAP) sites in 2000; equipment makers started marketing handsets capable of downloading from the Internet; and cellular operators began offering partial WAP services. Third generation (3G) mobile-phone services with Internet capability should be launched in 2004.

INFORMATION COMMUNICATIONS TECHNOLOGY VIETNAM

Statistical Snapshot

Population (millions)	81.6 (mid-2003)
Adult literacy rate	94.0 (%)
Personal computers (per 1,000 people)	12 (2001)
Internet service providers	4 (2001)
Internet users (eiu)	1,900,000 (2002)
Telephone mainlines	4,000,000 (2002)
Mobile phones	1,900,000 (2002)
Television sets (per 1,000)	186 (2001)
Cable subscribers	0 (2001)
Radios (per 1,000)	109 (2001)
E-commerce readiness	2.9 (out of 10)
IT expenditures (\$ mil) (source IDC)	\$393 (2002)



ICT: Vietnam has indicated its determination to develop and accelerate the growth of its information/communications/telecommunications (ICT) sector by issuing policies and strategies to create a favorable environment. The latest draft of the National ICT Strategy, released in October 2003 by the Ministry of Post and Telematics, outlines a set of ambitious development goals to make access to the Internet and telecommunications services equal to other countries in the region. The Strategy includes upgrading Vietnam's IT infrastructure, developing human resources, improving IT applications and strengthening the domestic IT industry. In 2002, Vietnam's spending for IT products and services reached \$393 million, with 88 percent attributed to hardware sales, according to International Data Corporation. The Government of Vietnam estimates yearly computer sales of 375,000 units. About 20 local computer firms sourcing the majority of their components from inside the country hold a 17 percent share of the market. The group plans to work together to raise production competitiveness to acquire 50 percent of the local market by 2005. The United States exported \$14 million in computer products to Vietnam in 2002. Vietnam's software market is small due to limited local demand, but more importantly because piracy rates in the country remain the highest in the world. The Business Software Alliance (BSA) reported that Vietnam's 95 percent piracy rate resulted in a \$49 million loss in software sales in 2002. While Vietnam is a signatory to several international agreements/associations that hold high standards for copyright, trademark, and patent protection, stringent enforcement of violations is required to promote change.

According to statistics from the Ministry of Post and Telematics, Vietnam had about 1.5 million Internet users in 2002, accounting for 2 percent of the population. Wireless Internet service is currently not offered due to limited demand. Most users are students between the ages of 14 and 24 who use the country's estimated 4,000 Internet cafes to chat with friends, send e-mail, and play games. The Vietnamese government restricts access to many websites and controls the flow of information through website registration requirements, Internet filters, and censorship of the local media. As a result, only 10 percent of users actually surf worldwide websites.

E-Commerce: The potential growth of e-commerce remains limited in Vietnam. Shortcomings, in infrastructure, electronic payment systems, information security, and a legal framework to regulate e-commerce transactions are among the barriers holding back its development. In addition, the Vietnamese, like many other Asians, tend to prefer face-to-face transactions and few use credit cards. A 2002 survey of 56,000 Vietnamese companies indicated that only 3 percent had engaged in e-commerce and only 7 percent intended to implement e-commerce to varying degrees. The survey also revealed that only 1,500 of those companies had private websites. However, the Vietnamese government is taking the initiative to develop the Internet into a business tool by launching the Vietnam Business Website that completed the first phase of the National Business Information Network. The network aims to create a more transparent business environment through information dissemination and more efficient business registration procedures. Although Decree No. 55/ND-CP, effective September 2001, replaced the 1977 Internet legislation, no legal framework or regulations for e-signatures and e-contracts are currently in place.

Telecommunications: Vietnam's telecommunications industry is rated by the International Telecommunication Union (ITU) as the second fastest-growing in the world after China. In 2002 there were nearly 4 million telephone mainlines equivalent to a teledensity of about 4.9 per 100 people. Mobile phone subscribers reached 1.7 million, equivalent to around 2.1 per 100 people. The telecommunications sector is controlled by the Vietnamese government, with the Vietnam Posts and Telecommunications Corporation (VNPT) as the dominant player. Aware of the growing demand for ITC, the government recognizes that broadband communications including fixed wireless access has great potential for addressing current infrastructure challenges. VNPT recently completed the first phase of the country's new generation network (NGN) and digital subscriber lines, SHDSL to provide voice and high-speed data services on a unified telecommunications structure. Vietnam's backbone transmission networks include optic fibre rings with capacities of 2.5 Gbps, and microwave systems with capacities of 140 Mbps and 622 Mbps. Vietnam's first satellite, Vinasat, is scheduled to be launched in 2004 to help increase coverage and the quality of its telecom services.

Under the U.S.-Vietnam Bilateral Trade Agreement, implemented in December 2001, Vietnam committed to opening its telecom market with the following important milestones: (2003-2004) permit the establishment of joint ventures; (2005) joint ventures should be able to enter the mobile and satellite services market and; (2007) basic voice telephony should be liberalized to allow competition for telephone services including fixed local, long distance and international services.

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