

## Section 4

### Network Infrastructure Supporting u-Japan

#### 1 Progress of broadband

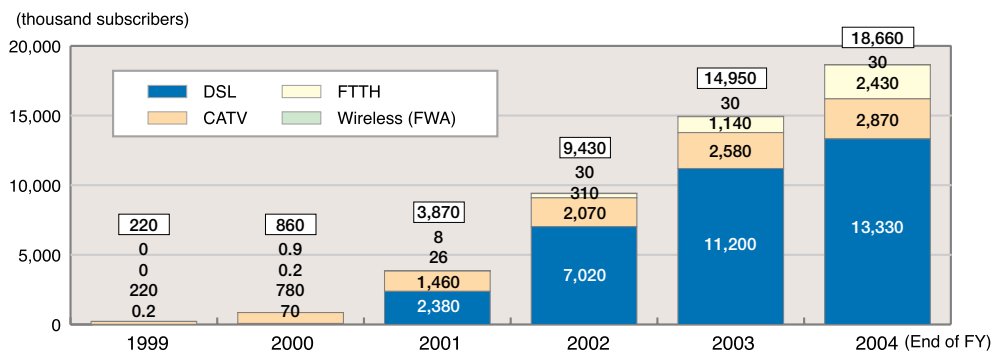
The number of broadband subscribers reached 18.66 million at the end of December 2004, increasing by 36.5% over the previous year. In this manner, broadband is continuing to expand steadily (Figure 1-4-1). Among the broadband subscribers, 13.33 million subscribe to DSL, 2.87 million to cable Internet, and 2.43 million to FTTH. Thus, DSL subscribers account for 71.4% of broadband subscribers.

Looking at the transition in the quarterly net increase of subscribers in 2003 and 2004, DSL subscribers decreased from 1.377 million in the January-March 2003 term to 522 thousand in the October-December 2004

term, while FTTH subscribers increased from 99 thousand to 401 thousand during the same period. Therefore, FTTH is expected to further spread in the future (Figure 1-4-2).

When making international comparison of broadband diffusion, the number of broadband subscribers in 2003 was the highest in the United States with 27.15 million subscribers, followed by Japan (14.92 million subscribers), the Republic of Korea (11.18 million subscribers), and China (10.52 million subscribers). Meanwhile, the broadband penetration rate in 2003 was the highest in the Republic of Korea at 23.3%, followed by Hong Kong (18.0%) and Canada (14.7%). The penetration rate in Japan was 11.7%, raising its rank to sev-

Figure 1-4-1 Transition in the number of broadband subscribers

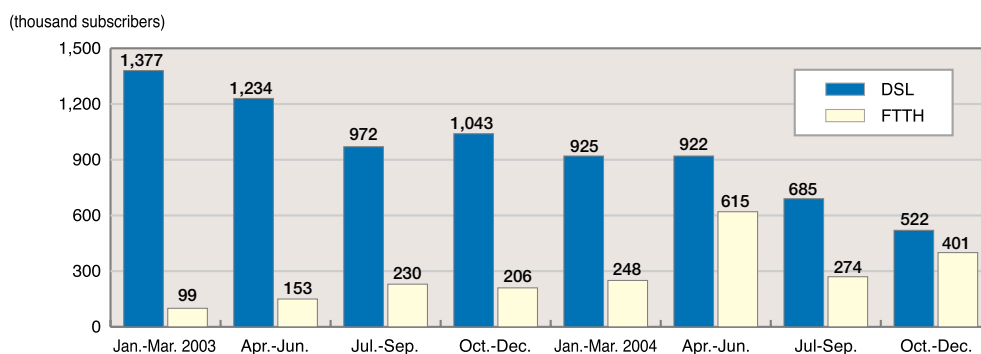


Notes:

The values for 2004 are those as of the end of December.

Broadband: Total for FTTH, DSL, cable Internet, and wireless (FWA)

Figure 1-4-2 Net increase in the number of DSL/FTTH subscribers



enth place from ninth place in 2002 (Figure 1-4-3).

When the DSL and cable Internet fees in various countries are compared by converting them into fees per 100 kbps, the fees in Japan are the lowest at 0.06 dollars, followed by the Republic of Korea (0.24 dollars), Sweden (0.24 dollars), and Taiwan (0.44 dollars) (Figure 1-4-4).

## 2 Progress of mobile communications

The number of mobile phone subscribers at the end of FY 2004 was 87 million (increasing by 6.7% over the previous year), continuing to increase but slowing down. The number of mobile phone Internet (Internet access services using mobile phones) subscribers was 75.15 million (increasing by 7.8% over the previous year), accounting for 86.4% of mobile phone subscribers (Figure 1-4-5).

With regard to third-generation mobile phones, the NTT DoCoMo group started W-CDMA services in October 2001 for the first time in the world, then the KDDI group started CDMA2000 services in April 2002

and J-Phone (currently Vodafone) started W-CDMA services in December of the same year. The number of third-generation mobile phone subscribers at the end of FY 2004 reached 30.35 million (increasing by 81.8% over the previous year), accounting for 34.9% of mobile phone subscribers (Figure 1-4-6).

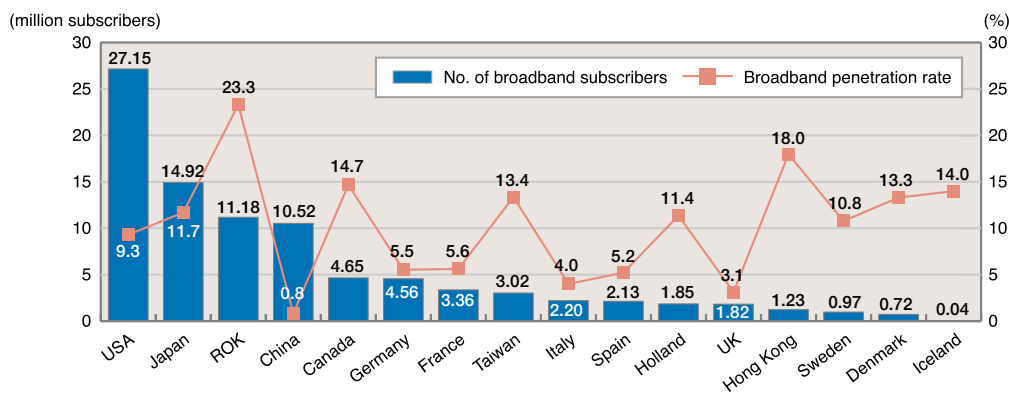
The rate of Internet users using wireless LAN is 17.1%, exceeding the 15.1% in the United States and the 7.3% in the Republic of Korea.

## 3 Progress of IP networks

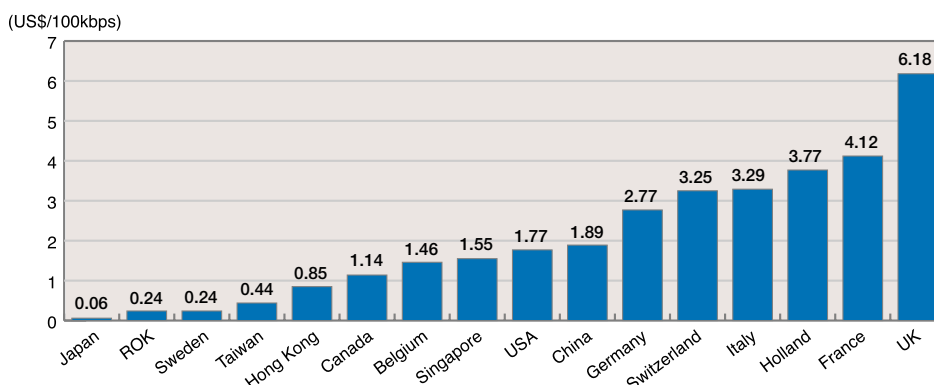
The utilization rate of IP phones in households increased by 5.4 points from 7.3% in 2003 to 12.7% in 2004. In addition, up to 69.1% of households plan the introduction, so IP phones are expected to spread further in the future (Figure 1-4-7). As for the toll-cutting effect of IP phones, 46.0% of the users recognized a toll-cutting effect, while 16.6% recognized no changes in tolls (Figure 1-4-8).

The communications services that are most widely used as trunk systems for corporate communications networks are “IP-VPNs” at 24.7%, followed by “Internet

**Figure 1-4-3 International comparison of the number of broadband subscribers and the penetration rate (2003)**

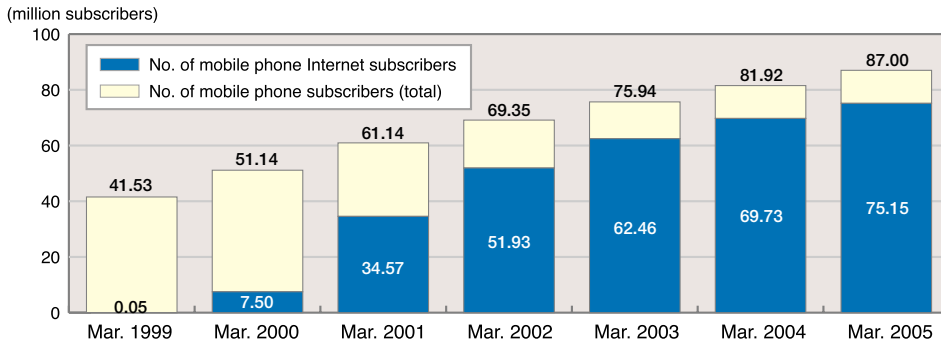


**Figure 1-4-4 International comparison of broadband fees (fees per 100 kbps; 2003)**



Source for Figures 1-4-3 and 1-4-4: Produced from on ITU, The Portable Internet (September 2004)

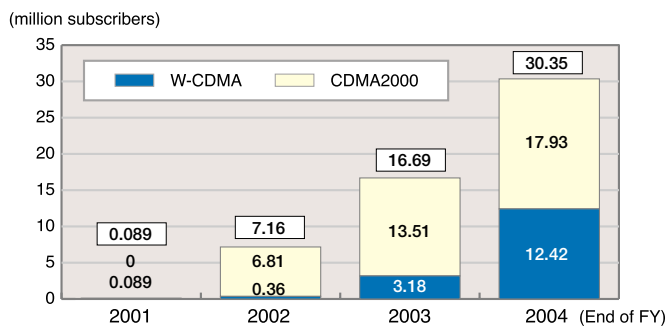
**Figure 1-4-5 Transition in the number of mobile phone subscribers**



\* The number of mobile phone Internet subscribers indicates the number of subscribers to i-mode, EZweb (including former EZaccess), and Vodafone Live! (including former J-Sky) services provided by mobile phone carriers.

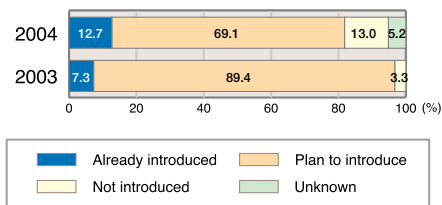
Produced from materials from the Telecommunications Carriers Association

**Figure 1-4-6 Transition in the number of third-generation mobile phone subscribers**



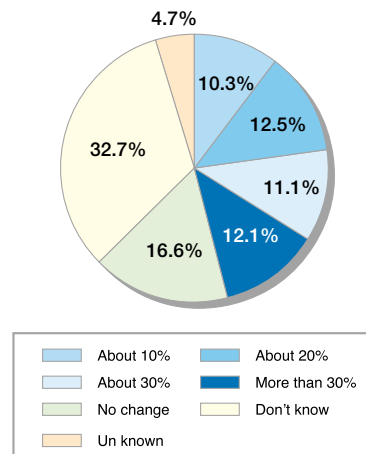
Produced from materials from the Telecommunications Carriers Association

**Figure 1-4-7 IP phone utilization rate for households**



\* The option "plan to introduce" was added in the 2004 survey.

**Figure 1-4-8 Toll-cutting effect of IP phones**



Source for Figures 1-4-7 and 1-4-8: MIC, Communications Usage Trend Survey

VPNs” (18.3%) and “dedicated lines” (15.1%). Compared to 2003, the use of “IP-VPNs” and “Internet VPNs” increased, while the use of “dedicated lines” and other services decreased. This suggests that IP networks are being increasingly used as trunk systems (Figure 1-4-9).

#### 4 Diffusion of terrestrial digital broadcasting

Terrestrial digital broadcasting, which was launched in three metropolitan areas (Kanto, Chukyo, and Kinki) in December 2003, has been steadily expanding its service areas. The shipment volume of receivers supporting terrestrial digital broadcasting also increased rapidly. The cumulative shipment volume at the end of April 2005 reached 4,335,000 units (Figure 1-4-10).

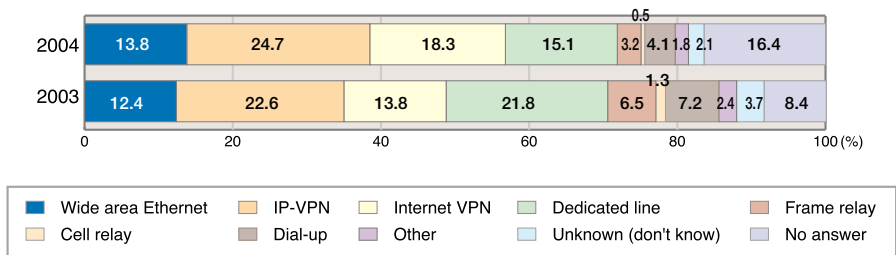
#### 5. Japan’s advantage in information and communications equipment and technology

The areas of ICT R&D that should be particularly emphasized in promoting construction of a ubiquitous

network society in the future are: (i) new-generation network technology; (ii) universal communications technology; and (iii) ICT for safety and security.

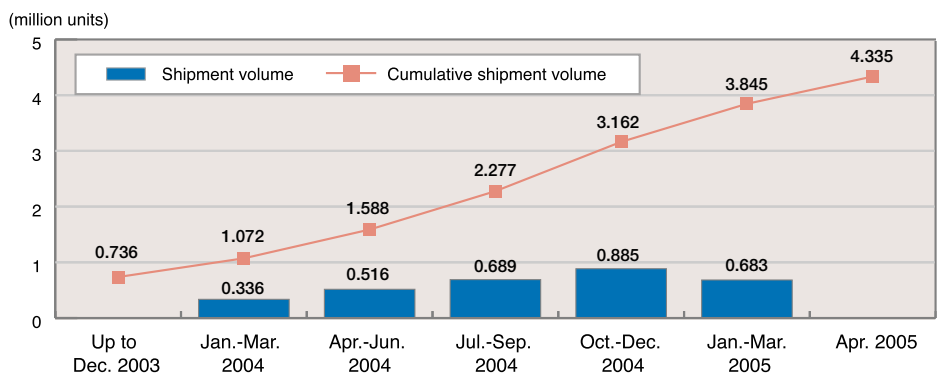
A survey was conducted on Japanese ICT engineers concerning the advantages of Japan, North America, Europe, and Asia in major core technology in these three areas. As a result, many responded that Japan had an advantage in FTTH, next-generation mobile phones, real-world networked robots, high-definition imaging technology, home networks, and mobile equipment technology, while many responded that North America had an advantage in the area of ICT for safety and security, such as IP traceback technology, automated management of network building/operation, and adhoc sensor networks (Figure 1-4-11).

Figure 1-4-9 Services used for trunk systems of corporate communications networks



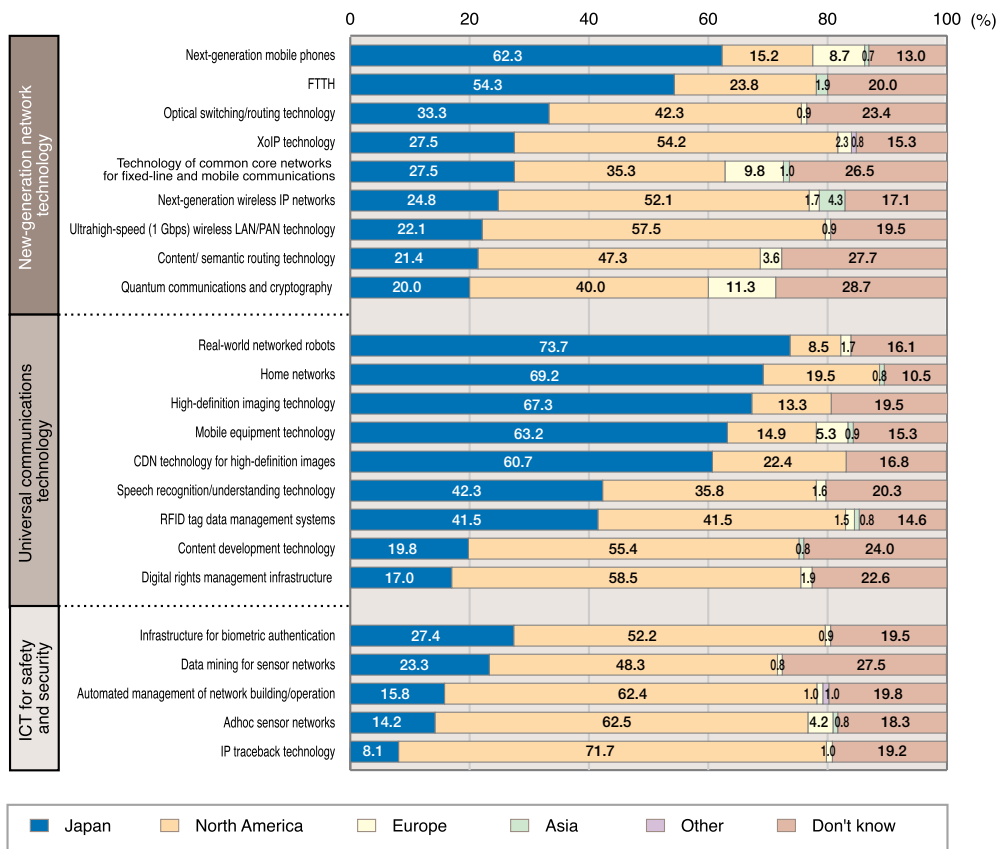
Source MIC, Communications Usage Trend Survey

Figure 1-4-10 Shipment volume of receivers supporting terrestrial digital broadcasting



Produced from materials from the Japan Electronics and Information Technology Industries Association

**Figure 1-4-11 International comparison of the advantages in ubiquitous network related technology**



Source: Survey on Trends Concerning a Ubiquitous Network Society