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ICT Statistics in Republic of Korea

**Ministry of Information and Communication (MIC)
National Computerization Agency (NCA)
National Internet Development Agency of Korea (NIDA)**

Republic of Korea

Website: <http://www.mic.go.kr>

I. Information of ICT Statistics Collections

A. General information

Country	Republic of Korea
Contact details	
<ul style="list-style-type: none"> • The Survey on Information Society 	Lim, Nak Hee : Deputy Director Korean Ministry of Information and Communication email : lucky7@mic.go.kr
	Joung, Hyun Min : Senior Researcher National Computerization Agency email: hyunmin@nca.or.kr
<ul style="list-style-type: none"> • A Standard Statistical Yearbook in Korean IT Industry 	Lee, Jae-Chan : Director Korea Association of Information & Telecommunication email: jclee@kait.or.kr
	Yang, Chang-Jun: Team leader Korea Association of Information & Telecommunication email: ycj@kait.or.kr
	Jeong, Doug Won: Researcher Korea Association of Information & Telecommunication email: email: dwjeong@kait.or.kr
<ul style="list-style-type: none"> • Survey on the Computer and Internet Usage • Internet Infrastructure Statistics 	Cho, Chan-Hyeong : Team Chief National Internet Development Agency of Korea (NIDA) email : chcho@nida.or.kr

B. Details of ICT Collections

There are five ICT statistics in terms of three perspectives:

- Establishment: The Survey on Information Society
- Industry: A Standard Statistical Yearbook in Korean IT Industry
- Household and Individual: Survey on the Computer and Internet Usage
- Other: Internet Infrastructure Statistics

1. Name of collection: The Survey on Information Society

Nature of collection	ICT use collection - Establishment
Collection agency	National Computerization Agency http://www.nca.or.kr
General references to collection material	<u>The Survey on Information Society</u> (annual survey since 1999)
Survey basis or vehicle	The Survey on Information Society is a dedicated establishment survey of ICT infrastructure and usage.
Frequency of collection	Annual
Collection history	The Survey on Information Society has been conducted since 1999.
Whether collection is mandatory or voluntary	Mandatory
Scope and coverage of collection	Target population is establishments with 5 employees or more and 8 sectoral industries.
Main classifications used	Industry – Agriculture & Fishery, Light Industry, Heavy Industry, Petrochemical, Construction, Distribution, Finance & Insurance, Other service Population - establishments with 5 employees or more Size – about 7,000 samples
Collection methodology	Face to face
Reporting and Statistical units	Establishment
Sample frame used	The Census on basic characteristics of establishments (Korea National Statistical Office)
Sampling method	Multistage stratified random sampling
Sample size	6,550 samples (2004)
Response rate	91.2 % (2004)
Methods for dealing with non-response (item and unit)	Hot-Deck Imputation is used.
Weighting of results	Estimates are weighted by the number of establishments.

Relative standard errors (or coefficients of variation) on main aggregates	Confidential Interval : 95% Sampling Error : +/- 1.26% (2004 year)
Known data quality issues with this collection	Comparability problems over time - Characteristic of target population have been changed. 1999: Household/ Enterprise/ Public Institution 2000: Household/ Enterprise 2001: Enterprise/ Public Institution 2002 - 2004: Establishment
Output details	Yearbook of Information Society Statistics. See link to main statistics of 2001, 2002 year: http://www.ipc.go.kr/ipceng/other/stat_manager.jsp
Other comments	None

2. Name of collection: A Standard Statistical Yearbook in Korean IT industry

Nature of collection	Information & Telecommunication(IT) industry collection Service, Software – Enterprises Hardware manufacturers - Establishments
Collection agency	Korea Association of Information & Telecommunication
General references to collection material	Korean IT Goods and Services survey
Survey basis or vehicle	IT service basic telecommunication services, value added communication services, resale services, Broadcasting Service Hardware Information & Communication equipments, Information systems, Broadcasting equipments, Electronic Components Software & Computer Related Services Package S/W, Computer related services, Digital contents development services, Database production services and Database searcher
Frequency of collection	1 yearly
Collection history	A Standard Statistical Yearbook in Korean IT industry has been conducted since 1996
Whether collection is mandatory or	Voluntary

voluntary	
Scope and coverage of collection	See Survey basis or vehicle
Main classifications used	IT Goods and Services Classification
Collection methodology	Telephone interview, email, fax
Reporting and Statistical units	Production, Domestic market size, exports, imports and number of employees, Sales revenue, etc.
Sample frame used	Service, Software - whole establishments IT equipments manufacturers - establishments with 5 employees or more
Sampling method	N/A
Sample size	N/A
Response rate	Over 95%
Methods for dealing with non-response (item and unit)	Re-interviewing, refer to official disclosure of the company(Company investor relation report, business report, etc)
Weighting of results	N/A
Relative standard errors (or coefficients of variation) on main aggregates	N/A
Known data quality issues with this collection	N/A
Output details	A Standard Yearbook in Korean IT industry is published by Korea Association of Information & Telecommunication, and file download is available at KAIT statistics website (www.iti.or.kr or www.kait.or.kr)
Other comments	A Standard Yearbook in IT industry was approved by Korea National Statistical Office in 1996, and the classification system was approved as Korean IT standard(TTAS) by Telecommunication Technology Association in December 2003.

3. Name of collection: Survey on the Computer and Internet Usage

Nature of collection	ICT use collection- Household/individual
Collection agency	National Internet Development Agency of Korea (NIDA) http://www.nida.or.kr
General references to collection	<u>Survey on the Computer and Internet Usage</u> - The

material	only survey on household and individual use of ICT in Korea conducted nationwide (Summaries, full texts and questionnaires are publicly available both in English and Korean. They are shown in the survey link http://isis.nida.or.kr
Survey basis or vehicle	Standalone survey
Frequency of collection	Semiannually (June / December)
Collection history	<u>Survey on the Internet Users and Use Pattern</u> was conducted by KRNIC(currently NIDA) from 1999 to 2002. It was carried out once in 1999, 3 times in 2000, quarterly in 2001, and semiannually in 2002. Besides NIDA, similar surveys had been carried out by several organizations during those periods, which were integrated for efficient survey and its results in 2003. In 2003, the survey above changed its name to <u>Survey on the Computer and Internet Usage</u> and became a government approval statistics, and it has been conducted semiannually since 2003.
Whether collection is mandatory or voluntary	Mandatory
Scope and coverage of collection	All households and their family members in Korea
Main classifications used	<u>Gender</u> - male/female <u>Age</u> - age 6-19 / 20's / 30's / 40's / 50's / 60 and older <u>Provinces</u> - 9 provinces and 7 large cities <u>Region</u> - large cities/ small and medium cities/ rural areas <u>Household income</u> - less than 1 million won / 1-2 / 2-3 / 3-4 / 4 and more million won <u>Education</u> – elementary and under / junior high grad / high school grad / college grad and above <u>Occupation</u> – professional and manager / white-collar / services and sales / production / agriculture and fishery / student / housewife / unemployed
Collection methodology	Face to face interview
Reporting and Statistical units	Households and individuals
Sample frame used	Enumeration districts(EDs) of <u>the Year 2000 Population and Housing Census</u> conducted by Korea National Statistical Office
Sampling method	<u>Multi-stage stratified sampling</u> -The whole nation was

	stratified into 16 strata (the 7 largest cities and 9 provinces). Based on 10% EDs from the Year 2000 Population and Housing Census, 700 sample EDs were allocated in proportion to a square root of total EDs in each of 16 strata. Within each sample ED, 10 households were systematically selected as sample households.
Sample size	Around 20,000 family members aged at least 6 and over of 7,000 households nationwide
Response rate	Over 90%
Methods for dealing with non-response (item and unit)	Non-responses were substituted by another households within same EDs which has identical characteristics by the sampling method.
Weighting of results	Weight values are obtained by applying a post-stratification method and the general formula for weights is the following: $wt(i,j,k)=N(i,j,k)/n(i,j,k)$, where $wt(i,j,k)$ is a weight for cell (i,j,k) , $N(i,j,k)$ is population for cell (i,j,k) , $n(i,j,k)$ is a sample size for cell (i,j,k) , i,j,k is a numeric order in a matrix used in the post-stratification method, such as region, gender and age groups.
Relative standard errors (or coefficients of variation) on main aggregates	RSEs are very small for aggregates. For example, RSE of Internet use rate is 0.95%
Known data quality issues with this collection	Before 2002, the survey was carried out with those aged 7 and over. However, considering people using the Internet at a very early age, the survey has been conducted with those aged 6 and over since 2002.
Output details	Survey on the computer and internet usage is published by NIDA semi-annually and also available both in English and Korean in the website http://isis.nida.or.kr It is also included in the book Korea Internet Statistics Yearbook published by NIDA annually.
Other comments	None. See the links http://isis.nida.or.kr which provide descriptions of the collections and the most recent summary results.

4. Name of collection: Internet Infrastructure Statistics

Nature of collection	Other ICT collection – Internet Infrastructure
Collection agency	National Internet Development Agency of Korea (NIDA) http://www.nida.or.kr
General references to collection material	<u>.KR Domain Name Statistics</u> – collection vehicle for the number of .kr domain name <u>IP Address Statistics</u> - collection vehicle for IP address allocation <u>Internet Host Statistics</u> – collection vehicle for the number of Internet Hosts in Korea
Survey basis or vehicle	<u>.KR Domain Name Statistics</u> - administrative byproduct data <u>IP Address Statistics</u> - administrative byproduct data <u>Internet Host Statistics</u> – standalone survey
Frequency of collection	<u>.KR Domain Name Statistics</u> - monthly <u>IP Address Statistics</u> - monthly <u>Internet Host Statistics</u> – once in 2004 and plan to be conducted semiannually from 2005
Collection history	Conducted from 1993 until now monthly excluding the Internet Host Statistics. Internet Host Statistics just began last year.
Whether collection is mandatory or voluntary	Voluntary
Scope and coverage of collection	<u>.KR Domain Name Statistics</u> – whole registered .KR domain name <u>IP Address Statistics</u> - IPv4 and IPv6 address allocated to Korea <u>Internet Host Statistics</u> – Whole Internet Hosts in Korea
Main classifications used	<u>.KR Domain Name Statistics</u> – period(monthly / yearly), SLD (co / re / ne / or / pe / go / region / Hangeul) <u>IP Address Statistics</u> – period (monthly / yearly) <u>Internet Host Statistics</u> – Not applicable
Collection methodology	<u>.KR Domain Name Statistics</u> – counting the number of registered .KR domain names in the DB owned by NIDA. <u>IP Address Statistics</u> – downloading information on the number of allocated IP address from the DB of

	RIR and NIDA, and counting it. <u>Internet Host Statistics</u> – analysing the zone files in the name server. Zone file of .KR comes from the name server of NIDA and those of com, net, org come from Verisign and PIR.
Reporting and Statistical units	Not applicable
Sample frame used	Not applicable
Sampling method	Not applicable
Sample size	Not applicable
Response rate	Not applicable
Methods for dealing with non-response (item and unit)	Not applicable
Weighting of results	Not applicable
Relative standard errors (or coefficients of variation) on main aggregates	Not applicable
Known data quality issues with this collection	<u>.KR Domain Name Statistics</u> – not including gTLD domain name. <u>Internet Host Statistics</u> – Due to the method of analysing the information in Zone files accessible for NIDA , only .KR, com, net, org can be analysed while other domains such as biz, info, pro, museum are excluded.
Output details	Monthly Internet Infrastructure Statistics can be shown in the website http://isis.nida.or.kr It is also included in the book Korea Internet Statistics Yearbook published by NIDA annually.
Other comments	None. See the links http://isis.nida.or.kr which provide descriptions of the collections and the most recent statistics.

II. ICT Statistics in Korea

A. Basic Indicators

Population : Korea National Statistical Office newly re-estimated to reflect rapid decline of birth rate in December 2004.

(unit : 1,000 persons)

Classification	1999	2000	2001	2002	2003	2004
populations	46,616.68	47,008.11	47,353.52	47,615.13	47,849.23	48,082.16

Source: National Statistical Office

GNI and GDP : GNI and GDP is revised. Because Korea adopted 1993 United Nations System of National Account(SNA) and changed reference year into 2000 year on March 2004 by Bank of Korea

(unit : billion won, billion \$)

Classification		1999	2000	2001	2002	2003
GNI	Won	523,355.4	576,160.0	621,027.9	685,069.0	722,355.8
	US \$	440.0	509.6	481.1	547.5	606.1
GDP	Won	529,499.7	578,664.5	622,122.6	684,263.5	721,345.9
	US \$	445.2	511.8	482.0	546.9	605.2

Source: Bank of Korea

B. Telephone

Main fixed telephone lines and subscriber

(unit : 1,000 lines, 1,000 persons)

Classification	1999	2000	2001	2002	2003(P)	2004(P)
Main lines	25,619.89	25,863.10	25,791.57	25,735.04	25,800.40	26,058.07
Main lines per 100 inhab.	54.96	55.02	54.48	54.02	53.83	54.19
Subscriber lines	25,536.67	25,863.10	25,584.26	25,525.69	25,590.57	25,900.04
Subscriber lines per 100 inhab.	54.78	55.02	54.04	53.58	53.40	53.87

Source: Korea Association of Information & Telecommunication (KAIT)

Mobile phone subscribers

(unit : 1,000 persons)

Classification	1999	2000	2001	2002	2003	2004
Subscribers	23,442.72	26,816.40	29,045.60	32,343.49	33,591.76	36,584.05
Subscribers per 100 inhab.	50.29	57.05	61.35	67.89	70.09	76.08

Source: Korea Association of Information & Telecommunication (KAIT)

Total telephone subscribers

(unit : 1,000 persons)

Classification	1999	2000	2001	2002	2003(P)	2004(P)
subscribers	48,979.39	52,679.50	54,629.86	57,869.18	59,182.33	62,484.09
subscribers per 100 inhab.	105.07	112.06	115.39	121.47	123.49	129.95

Source: Korea Association of Information & Telecommunication (KAIT)

C. Internet and PC

Internet Users and Usage Rate

(unit : 1,000 persons)

Classification	1999	2000	2001	2002	2003	2004
Internet User	10,860	19,040	24,380	26,270	29,220	31,580
Internet Usage rate	22.4	44.7	56.6	59.4	65.5	70.2

Source: National Internet Development Agency of Korea(NIDA)

Note: Internet Usage rate is calculated the number of internet users divided by number of people over 6 years old.

Internet subscribers

(unit : 1,000 persons)

Classification	1999	2000	2001	2002	2003	2004
Dial-up	952.27	1,018.16	622.88	479.84	259.06	
ISDN	237.02	372.20	131.00	105.13	104.23	
Broadband	366.00	4,017.49	7,805.52	10,405.49	11,178.50	11,921.44
Total	1,555.28	5,407.85	8,559.39	10,990.45	11,541.79	12,025.67
Subscribers per 100 inhab.	3.34	11.50	18.08	23.07	24.08	

Source: Ministry of Information and Communication

Household online

Classification	2000	2001	2002	2003	2004
Household online ratio (%)	70.1	82.3	89.3	91.5	92.8

Source: National Internet Development Agency of Korea(NIDA)

Note: households online ratio = households with internet access/households equipped PC

PCs Supply

(unit : 1,000 PCs)

Classification	1999	2000	2001	2002	2003	2004(p)
Home PCs		11,060	12,812	13,913	15,173	16,690
Business PCs		7,555	9,683	9,589	9,074	9,511
Number of PCs(Total)	11,530	18,615	22,495	23,502	24,248	26,201
PC penetration rate(%) for total population	24.7%	39.6%	47.5%	49.3%	50.7%	54.5%

Source: National Computerization Agency (NCA)

Note: Date of 2004 year estimated

D. TV and Cable TV

Cable television equipped households

(unit : 1,000 households)

Classification	2000	2001	2002	2003	2004(P)
CATV	9,991.99	10,325.52	11,434.53	13,524.06	14,200.32

Source : Korean Broadcasting Commission

Note : 2003 figure is provisional

TV receivers

(unit : 1,000 receivers)

Classification	2000	2002	2003	2004(P)
TV receivers	19,020.00	21,710.00	21,957.95	22,915.00

Source : Korea Electric Power Corporation(KEPCO)

Note : 2003 figure is provisional

TV equipped households

(unit : 1,000 households)

Classification	1999	2000	2001	2002	2003	2004
Television equipped households	14,962.05	15,112.67	15,499.70	15,854.49	16,379.72	16,707.54

Source : Korea Broadcasting System(KBS)

E. Tariffs

Fixed telephone cost

Classification	2001	2002	2003	2004
Connection fee(won)	60,000	60,000	60,000	60,000
Monthly subscription(won)	5,200	5,200	5,200	5,200
Cost of a 3- minute local call	peak rate	39	39	39
	off-peak rate	32	32	32

Source: Korea Telecom(KT)

Note: Business and residential lines are charged at the same rate.

International fixed telephone costs(per 3 minutes in peak hours to USA)

Classification	3 digit	5 digit
Average costs(won)	831won	490won
Average costs(US \$)	0.72\$	0.42\$

Source: Ministry of Information and Communication

Note: Average costs for 3 digit represents average international telephone cost offered by four common carriers using 3 digit international access code. The figure for 5 digit means average international cost offered by four common carriers providing 5 digit international access service plus four special carriers using 5 digit international code access.

Cellular phone costs

Classification	2002		2003		2004		
	LGT, KTF	SKT	LGT, KTF	SKT	LGT, KTF	SKT	
Connection charge(won)	30,000	50,000	30,000	50,000	30,000	50,000	
Monthly subscription(won)	14,800	15,000	13,000	14,000	12,000	13,000	
Cost of a 3- minute local call	peak rate	324	378	324	360	324	360
	off-peak rate	180	270	180	252	180	252

Source : each company

F. Others

The number of Internet secure server

Classification	2001	2002	2003	2004
SSL	772	1,126	1,748	1,526
Secure Application Layer	295	715	1,776	1,924
Total	1,067	1,841	3,524	3,450

Source: Korea Information Security Agency(KISA)

Electronic Signature User

(unit : 1,000person)

Classification	2000	2001	2002	2003	2004
User	518	1,917	5,772	8,713	10,553

Online Banking Users

(unit : 1,000person)

Classification	1999	2000	2001	2002	2003	2004
Online Banking User	1,230	4,090	11,310	17,710	22,754	24,270

Source: The Bank of Korea

E-Commerce Transaction

(unit : billion US \$)

Classification	2000	2001	2002	2003
Total Amounts	45.6	89.7	148.1	196.4

Source: National Statistical Office

Online Stock-Trading Amount Rate

(unit : %)

Classification	1999	2000	2001	2002	2003	2004 . 3Q
Online Stock-Trading Amount rate	25.4	55.9	66.6	64.3	60.3	52.6

Source : The Korea Securities Dealers Association (KSDA)

III. Comments on Indicator

A. Statistics for Internet Secure Server

Based on the OECD Communication Outlook (2003), the Number of Internet Secure Server of Republic of Korea has not been accurately represented. OECD Communication Outlook indicated that the date of the Number of Internet Secure Server are 38(07/1998), 243(07/2000), 562(07/2002) per 100,000 inhabitants. The number of Internet Secure Server is more than those number in the OECD Outlook. There is obviously the gap between data of OECD Outlook and the Korea situation. That is due to a problem of data collection. OECD collected the number of Internet Secure Server only from the VeriSign SSL server certificates. However, Korea has issued not only the VeriSign SSL server certificates, but also the Baltimore, Thawte, Entrust SSL sever certificates.

Current situations of Republic of Korea are:

- ? Issued SSL web-server certificates (Randomly picked company)
 - CrossCert (VeriSign, Thawte local agent): around 1000 certificates
 - KICA (Baltimore local agent): 178 certificates
 - DotName Korea(Entrust, VeriSign local agent): around 700-1000 certificates

Therefore, when the density of secure servers in Korea are surveyed in that fashion, above facts must be considered.

B. Mobile Telephones Subscribers

Mobile telephone subscribers defined by ITU and other international organizations include prepaid and SIM(Subscriber Identification module) cards regardless whether they are used or not. The inclusion prepaid card and SIM card may not represent the real number of mobile phone subscribers.

Accordingly, we recommend some sort of adjustment to reflect the real number of mobile telephone subscribers based on different technology such as CDMA and GSM.

C. International Internet Bandwidth per Inhabitant

This indicator could not demonstrate the digital divide between developed and developing countries, because it could not appropriately reflect the reality of developed countries, which have affluent contents of the Internet. The Internet user in developed countries might not go to the other international Internet websites, because they could get their contents in their domestic Internet websites. If we want to use this indicator, we have to reversely use the way to calculate the result of this indicator (Please refer to ITU reports as below:)

The variables selected for quality are the amount of international Internet bandwidth and the number of broadband subscribers.¹⁶ In many developing countries, most Internet access is to sites abroad and therefore the amount of international bandwidth has a major impact on performance. In many developed countries, people visit domestic sites so that international bandwidth is not as important as “last mile” bandwidth.(ITU, The World Telecommunication Development Report 2003, p106)

D. Proportion of Households with a Radio

No Institute in South Korea collects the data of ‘Proportion of households with a radio’. We guess, most developed countries no longer consider ‘Proportion of households with a radio’ as the core indicator to measure the degree of ICT. So that, even though ‘Proportion of households with a radio’ might be useful to measure the degree of ICT development in terms of globalisation, it has a clear limitation of data collection so that you could not proceed your survey of ‘Proportion of households with a radio’ indicator.

E. Number of Internet Host

There is a doubt of statistical indicator: ‘Number of Internet Host’ due to following reasons:

- First, in case the server is located in outside country and is mainly used in inside country, it is very hard to geographically count that sever
- Second, because of advancement of web-hosting technology, one host could operate many websites
- Third, in case a country has a higher rate of usage of xDSL, which use dynamic IP, a country could have fewer number of Internet host