CNNIC
中国互联网络信息中心
CHINA INTERNET NETWORK INFORMATION CENTER

2014 Annual Report
China Internet Network Information Center

CONTENTS

Annual Report 2014

To Users

The year of 2014 marked the 20th anniversary of China's fully functional access to the world Internet and also the first year for its initiative from being a big country to a powerful country in Internet. Faced with new opportunities and challenges, CNNIC, as an important infrastructure constructor, operator and administrator of the Chinese information society, has faithfully performed its duties, constantly improved service levels, and protected users' rights and interests, making great contribution to the healthy development of China's Internet industry in the new age.

Over the past year, CNNIC has focused on both administration and application, made active efforts to improve service levels and user experience, and advanced the healthy development of national fundamental Internet resources; actively expanded services for new gTLDs, garnered a number of important qualifications, and promoted the development of new gTLDs by relying on its strengths in technology and experience; deepened the Internet research through its professional research team and data platform; seized the opportunity to engage itself in international exchange and cooperation in the Internet field, and further enhanced the voice and influence of China in the global Internet community.

2015 is the final year of the 12th Five-Year Plan period and a key year for deepening reforms in an all-round way. CNNIC will uphold its responsibility, bear in mind its positioning, concentrate on its core functions such as operation, administration and services of fundamental Internet resources, R&D and security work of fundamental Internet resources, research and consultancy on Internet development, and cooperation and technological exchange of global Internet, keep a more open mind, and strive to develop into a "world class network information center".

China Internet Network Information Center (CNNIC)

January 2015

Profile of CNNIC

1.CNNIC introduction

China Internet Network Information Center (abbreviated as CNNIC) is an administration and service organization set up on June 3, 1997 upon the approval of the competent authority and undertakes the responsibilities as the national Internet network information center.

In light of the policies of "providing efficient and application-oriented services through secure & stable Internet infrastructure for public interests", CNNIC, as an important constructor, operator and administrator of infrastructure in Chinese information society, is responsible for operation, administration and services of fundamental Internet resources, undertakes R&D and security work of fundamental Internet resources, conducts research on Internet development and provides consultancy, and promotes the cooperation and technological exchange of global Internet in an effort to become a world-class network information center.

2.Main responsibilities of CNNIC

1)Operation, Administration and Service organization of national network fundamental resources

CNNIC is a registry of domain names and root zone operator. It operates and administers country code top level domain of .CN and Chinese domain name system, and provides 24-hour services of domain name registration and resolution as well as WHOIS lookup for worldwide users with its professional technologies.

CNNIC is a member of Asia-Pacific Network Information Centre (APNIC) as a National Internet Registry (NIR). As the convener of IP Address Allocation Alliance, CNNIC is responsible for providing allocation and administration services to China's Internet service providers (ISPs) and Internet users and promoting the transition to Internet of next-generation based on IPv6 in China.

2)Research, Development and Security center of national network fundamental resources

CNNIC constructs a world-leading, efficient and safe & stable service platform for fundamental network resources. It provides multi-level and multi-mode not-for-profit services for fundamental network resources, and seeks to make a breakthrough in the core competence of fundamental network resources and self-developed devices and software so as to improve the reliability, security and stability of China's system of fundamental network resources.

3)Research and Consulting services driving force for Internet development

CNNIC is responsible for conducting surveys about the Internet including survey on the development status of China's Internet, and it gives a description of the macroscopic picture of the development status of China's Internet and records its development faithfully. CNNIC will continue to beef up its support for the research of government policies on one hand and provide not-for-profit research and consulting services for Internet development for enterprises, users and research institutes on the other hand.

4)Platform for Internet open cooperation and technical exchange

CNNIC tracks the latest development of Internet policies and technologies and has business coordination and cooperation with relevant international organizations and the Internet network information centers in other countries and regions. CNNIC hosts important international conferences and activities concerning the Internet, and creates an open research environment and platform for international exchange and sharing. It promotes the application of scientific research achievements and development of China's Internet.

Work Overview of 2014

1.Key work

Key work in 2013	Description
ccTLD registration volume	11,089,231 registered CN domain names and 285,720 Chinese domain names
Availability of ccTLD resolution service	100% for CN domain names and 100% for Chinese domain names
Availability of ccTLD registration service	100% for CN domain names and 100% for Chinese domain names
Availability of Whois service	100% for CN domain names and 100% for Chinese domain names
Customer satisfaction (telephone investigation of the users' satisfaction to the services of CNNIC)	96.86%
IPv4 address allocation	76,862,976
IPv6 address allocation	6,436 blocks/32
Research report on Internet development	Two macroscopic reports of Internet situation and 24 reports on specific Internet fields
Publications of national and international standards	5 IETF drafts 5 national standards released
Journal papers and conference papers	22 papers, including 8 journal papers and 14 conference papers
Patent application	40 cases for domestic patent application, 11 cases for PCT patent application and 20 cases for invention patent authorization
Software copyright application	20 items registered
Positions in international organizations	5 persons

2.Income and expenditure

According to the audit conducted by Beijing Huachen Certified Public Accountants Firm, CNNIC registered an income of RMB161,751,507.40 and an expenditure of RMB160,865,637.91 in 2014, representing a balance of RMB885,868.49. In the view of the Firm: the income and expenditure statement is formulated in accordance with the *Accounting System of Scientific Institutions* and *Financial System of Scientific Institutions*, and it, on every significant aspect, reflects the income and expenditures of CNNIC in 2014.

Managing and Operating the National Fundamental Internet Resources

1. Domain name registration and application

1) Launch the pilot program of vehicle plate number domain name inquiry system

In addition to the projects conducted in cooperation with Beijing, Zhejiang, Xinjiang, Ningxia and other places to support the IT application in medium-sized, small- and micro-enterprises and promote the application of national domain names, CNNIC also collaborated with domain name registrars and advanced cooperation with local police authorities to innovate the application of national domain names and help improve vehicle information service for the public.

On December 28, 2014, the vehicle plate number domain name inquiry system was launched in Nanning City

Vehicle information inquiry through vehicle plate number domain names is an innovative application of national domain names launched by CNNIC. The application was firstly introduced as a pilot program in Nanning. On the basis of summing up experience and refining the application plan, CNNIC will promote this innovative application in more cities to benefit more vehicle owners and Internet users.

2) Promoting national domain names in combination with traditional festivals and customs

As hairy crab sales shot up before the Mid-Autumn Day in 2014, CNNIC took the opportunity to promote "中国" domain names. Promotional information containing "送大闸蟹.中国" and "送大闸蟹.CN" (send hairy crabs) could be found on about 1,500 display stands in office buildings, 1,500 advertising positions for different customer segments, and 3,000 video positions in elevators of office buildings and residential buildings. Such information was also presented through various sales channels such as jd.com, corporate customers and group buying websites, in an effort to encourage users to visit "送大闸蟹.中国" and "送大闸蟹.CN" domain names and get a better understanding of the features of ".中国" domain names.

Promoting national domain names in combination with traditional festivals and customs

3) Promoting national domain names through sporting events

In cooperation with the well-known running group "Runner Said", CNNIC organized a number of activities with runners wearing sport suits printed with the domain name "跑步者说.中国" (runnersaid.中国) in the Beijing Olympic Forest Park and during the Beijing Marathon. With a total running length exceeding 60 km, the activities were attended by more than 800 runners, attracting the attention of 300,000 people. Meanwhile, these activities were posted in real time on Weibo and WeChat, with more than 500,000 exposures.

Promoting national domain names through sporting events

4)Promoting national domain names through popular radio programs

In cooperation with Radio Beijing Corporation (RBC), CNNIC launched ".中国" and ".CN" domain names for Beijing Communication Radio and its popular program "Smooth Way". During the morning and evening program periods, the radio announcer broadcast "北京交通广播.中国", "北京交通广播.cn" and "1039—路畅通.中国" and mobilized the audience to interact by visiting these Chinese domain names.

5)Presenting national domain dames through TV program

By working with Beijing Television Station, CNNIC launched for its popular health program titled "I am a Doctor" the "图说养生.中国" (regimen in graphics) domain name, promoted this domain name in voiceover and subtitles, and mobilized the audience to visit the program website via the domain name of "图说养生.中国", so as to help the Chinese people get used to using ".中国" domain names and set a good example for the application of these domain names.

6)Promoting national domain names through on-campus campaign

In 2014, CNNIC continued to carry out the promotion campaign themed "Come to Experience a New Era of Chinese-language Internet" to promote national domain names on campus. Within two months, the campaign was conducted in seven 211 and 985 universities in four provinces and municipalities, attracting tens of thousands of college students and teachers to visit "校园行.中国" (campus promotion) website on mobile phones and participate in Q&As on site. The campaign has made good results.

Promoting national domain names through on-campus promotion campaign

2.Domain name registration, management and services

1)Improving domain name management system

In 2014, CNNIC further improved management and service levels through refining the domain name management system and taking various measures to strengthen the compliance of domain name registration. It optimized the registration application process, tightened the review of applicant qualifications, and advanced the building of a registration service team in a quality and efficient way; inspected the progress, effectiveness and compliance of the registration process on a regular basis to ensure the faithful performance of contracts; developed a new on-line financial system and a statistical system so that the financial and business data could become accessible in a timely and accurate manner for improved efficiency; optimized the approaches to evaluate agency services provided by registrars in order to encourage them to deliver better services; established working groups to strengthen communication with agencies; investigated and collected the opinions and suggestions from agencies on a regular basis; took initiative to investigate and severely punish two registrars for their violations, regulated the order of the domain name market, and safeguarded the reputation of CNNIC and interests of users; and monitored domain name registration practices and trends, identified and prevented inappropriate applications of domain names in a timely manner.

2)Upgrading national domain name products and services

➤Registering a domain name online throughout the entire process

In 2014, CNNIC upgraded the national domain name registration and review system in an all-round manner and established the online registration service process, making domain name registration more well-regulated and efficient. The automatic and manual audits combined have managed to ensure the accuracy of results and greatly improved the efficiency and user experience in this regard.

➤Rolling out a host of product optimization policies

In 2014, CNNIC successively adopted and adjusted a number of national domain name policies and rules and took many measures such as optimizing the naming review process and the applicant real-name verification process to improve user experience in national domain name registration.

➢**Launching the national domain name security lock service**

To enhance the security of national domain names, maintain the safe and stable operation of Internet, and protect the rights and interests of Internet users, CNNIC launched the national domain name security lock service in September 2014 with a view to ensuring such functions as resolution revision, registration information updating and domain name transfer will be limited only to the registration regulatory agencies. Such a service, in case of security problems detected in the accounts of registrars, can to the largest extent ensure the security of the national domain names and the domain name resolution, and prevent domain names from being maliciously transferred or deleted.
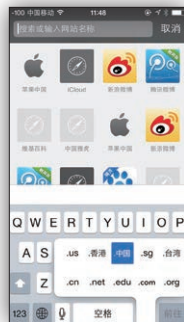
3)Improving the application environment of ".中国" domain names

➢**Shortcut input on mainstream mobile operating systems**

Following the iOS input method, Android native input method (version 4.4) and the Google input method have also supported the shortcut input of ".中国" domain names.
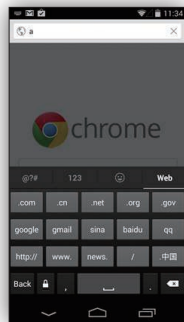
Shortcut input of
".中国" in the Android system

Shortcut input of
".中国" in the iOS system

4)Launching the world's first Chinese domain name email account registration platform

In 2014, CNNIC made strides in expanding the use of Chinese domain name email accounts, and launched the world's first Chinese domain email registration platform "http://互 联 网.中国" where users can apply for and register Chinese domain email addresses to connect with mainstream email servers.

The world's first Chinese domain name email account registration platform

5)Optimizing the overseas registration system and exalting the global brand image

In 2014, CNNIC further escalated the reputation and competitiveness of national domain names overseas, optimized the overseas registration service system, upgraded the application submission and verification methods for overseas users, simplified the application submission process for overseas domain name registrars, and enhanced the review efficiency, in a bid to accelerate the overseas registration process of national domain names. At the same time, it strengthened cooperation with quality overseas registrars. Thanks to its collaboration with international organizations such as the International Trademark Association (INTA) and the World Hosting Days (WHD), it managed to improve the brand image and recognition of the Chinese domain names and promote their sound development of overseas markets.

3.Banning the inappropriate use of domain names

CNNIC and Anti-Phishing Alliance of China (APAC) handled 51,198 phishing websites in 2014. By the end of 2014, APAC had identified and handled a total of 220,033 phishing websites.

In 2014, CNNIC completed the resolution and monitoring of about 170,000 Conficker domains.

Comparison between the Handlings of Phishing Websites in 2013 and 2014

Month	2013	2014
January	2,186	971
February	1,487	397
March	827	1,411
April	1,376	6,406
May	4,754	6,708
June	7,026	8,186
July	8,686	6,903
August	7,313	4,282
September	5,894	4,241
October	10,064	2,933
November	11,002	4,820
December	5,681	3,940

■ 2013   ■ 2014
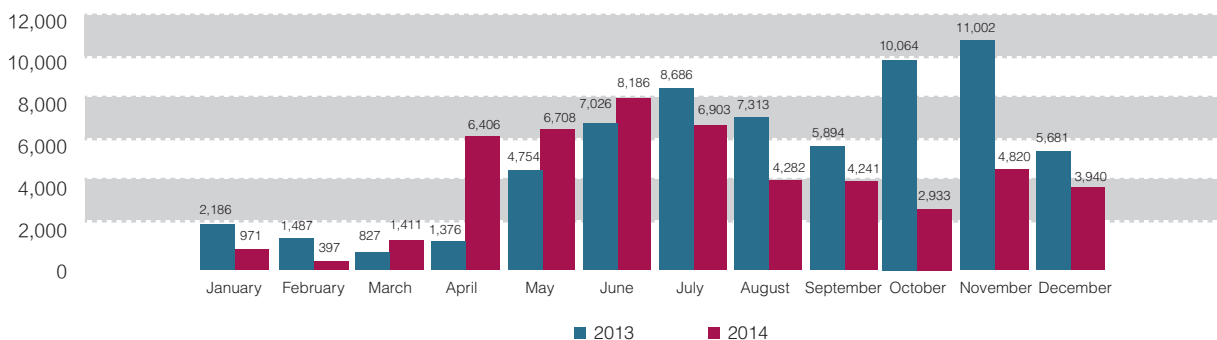
4.IP address allocation and management

By December 2014, CNNIC allocated 76,862,976 IPv4 addresses, equivalent to 4.58 As, accounting for 23% of all the IPv4 addresses in Mainland China. In 2014, as China's IP address registry, CNNIC responded promptly to APNIC's policy of "redistribution of returned IPv4 address blocks" so as to help Chinese users obtain more IPv4 addresses before their exhaustion.

By December 2014, the number of IPv6 addresses allocated was 6,436 blocks/32, accounting for 34.2% of the total IPv6 addresses in Mainland China, with the addition of 2,109 new addresses this year. The number of IPv6 addresses allocated by CNNIC has kept growing, which constitutes a great drive for the surge in IPv6 addresses in Mainland China.

it further improved the emergency response process and the building of the operation and maintenance-related knowledge base, carried out emergency drills on an irregular basis, and focused on strengthening the frontline operation and maintenance technology. Through a range of measures, the efficiency of emergency response has been improved, and the average time that frontline operation and maintenance staff takes to detect the attack types and sources has reduced from half an hour to less than five minutes.

2)Implementing the ccTLD system security plan in an all-round manner and improving the service and defense capabilities of the national domain name system substantially

In 2014, CNNIC steadily advanced the building of the national domain name system and earnestly implemented

Number of IP addresses allocated by CNNIC

- CNNIC IPv4(/16)
- CNNIC IPv6(/32)
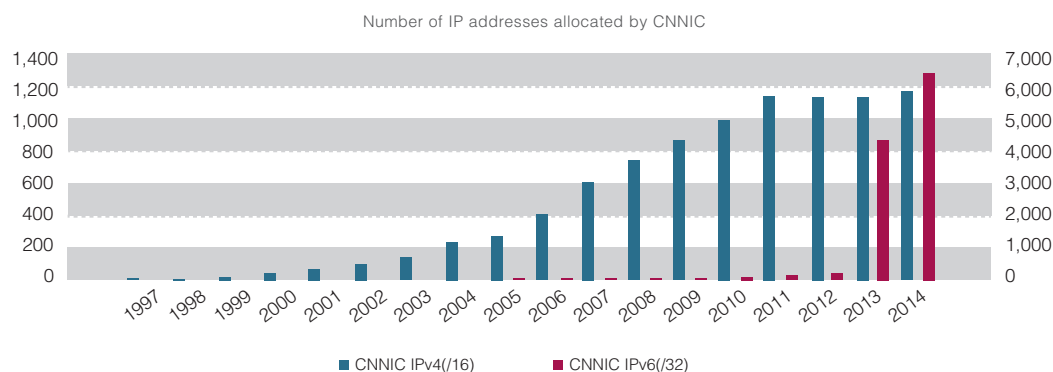
5.Operation, maintenance and development of the domain name system

1)Ensuring safe and stable operation of the national domain name service platform through various measures

In 2014, CNNIC did its utmost to ensure the safe and stable operation of the national domain name service platform, actively responded to more than 100 emergency traffic security accidents of domain names, made 328 changes and upgrades to services of the domain name platform, delivered over 490 system operation and maintenance services including system consolidation, emergency response and data extraction, and achieved the operation and maintenance goal of 100% availability of core services.

By strengthening operation and maintenance management and adjusting the shift system of frontline and non-frontline operation and maintenance staff, CNNIC greatly improved the duty shift efficiency and the capability of operation and maintenance engineers;

the *Notification of the Ministry of Industry and Information Technology (MIIT) on Strengthening Network Security of ccTLD* (GXBB [2014] No. 103). In collaboration with many domestic telecom enterprises, it steadily pushed forward the reconstruction and expansion of the ccTLD system and completed the business negotiations and reconstruction of nodes of Zhongguancun science & technology network, China Unicom in Yizhuang, Beijing, China Telecom in Chengdu, etc. Internationally, it completed the node construction in Dallas, the United States and was ready to build nodes in Manchester, the United Kingdom together with the NCC Group, enhanced the overseas service capacity of the ccTLD system, and improved global Internet user experience.

CNNIC was also active in cooperating with domestic Internet companies to improve the emergency response capability of the national domain name system. So far, it has completed the construction of Alibaba node and reached initial cooperation agreements with Baidu, 360, 21Vianet and other enterprises. Thanks to its efforts, the ccTLD resolution capacity had been remarkably improved.

In addition, CNNIC also optimized the worldwide architecture of the national domain name service platform and strengthened the platform's stability in service delivery and defense capacity. It realized the upgrading from one-star to double-star structure so that data on the national domain name service platform can be updated in a more stable and reliable way. To optimize the application of bandwidth in large-capacity service nodes, it deployed independently-developed anti-attack devices and DNS anti-attack software, and improved the anti-attack capacity of the national domain name service platform to cope with ultra-large denial-of-service attacks in real time.

6.Customer service system

1)Strengthening review management and optimizing review process

➤Enhancing compliance management for government domain names and regulating their registration

In June 2014, the Office of the Central Leading Group for Cyberspace Affairs issued the *Notification on Strengthening Security of Party and Government Websites* (ZWBF [2014] No. 1). According to the Notification and relevant regulations in *the Administrative Measures on Internet Domain Names of China and the Implementing Rules of China Internet Network Information Center on Domain Name Registration*, CNNIC conducted a series of inspections on government domain names after consolidating the standard registration management of national domain names, a move that rectified non-standard registrations and applications, achieving great results.

➤Promoting the optimization of relevance review policy and improving review efficiency and passing rate considerably

To further improve the registration efficiency of national domain names and provide efficient and convenient review service for users, CNNIC refined relevant policies and rules within the scope of China's domain name administration policies, and thus, more than 99% of Chinese and English domain names had passed the review.

Along with policy adjustments, CNNIC also improved the review system comprehensively and significantly enhanced the review efficiency by auditing the naming and the information of real-name applicants at the same time. After the optimization of the domain name review system, the review duration was shortened from 7 days to 5 days, the time from registration to resolution and use was greatly reduced, and 98% of domain names can be reviewed within one minute. The overall review efficiency was improved by 88.6% and the average review duration was shortened to only 1.2 hours.

2)Elevating the user service and capability

➤Building CNNIC service platform and expanding user service capacity

In 2014, CNNIC built its service platform that enables collaboration of multiple entities and improved business capability by pooling internal resources and optimizing configuration. The service platform, allowing the simultaneous operation of multiple basic businesses and meeting more new gTLD service hosting needs, has enhanced CNNIC's competitiveness in user service and effectively expanded its service capacity. With the aid of the service platform, user satisfaction about ".公司" and ".网络" DNS hosting reached 97.42%, well above the industry average.

➤Promoting product optimization and upgrading for stronger competitiveness

Relying on the complete user service data, CNNIC analyzed and dug out user demand for product optimization and formed a closed-loop solution mechanism for production optimization recommendations, turning users' opinions and suggestions into the catalyst for product upgrading. In 2014, it collected 57 pieces of recommendations covering many aspects such as product policy, feature and channel management, which promoted the completion of two important product upgrading and optimizing programs, thus further improving user experience and enhancing CNNIC's product competitiveness.
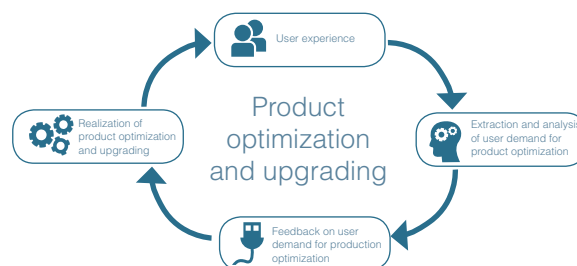
Closed-loop solution mechanism for production optimization recommendations

➤Efficient operation of the national domain name complaint handling center

The national domain name complaint handling center is responsible for supervising the behaviors of domain name registrars and protecting the legitimate rights and interests of national domain name users. In 2014, it handled 99 complaints (26 deemed valid) and helped users solve problems such as difficulty in transfer and denial of revision. Handling of complaints took three workdays on average, with customer satisfaction reaching 100%.

Trends in the number of complaints

In 2014, the center handled 1,448 problems reported by users. For the 1,429 problems about unauthorized sales in the name of CNNIC, it had instituted a special mechanism to rectify the unregulated sales behavior of registrars, while it had notified the relevant registrars of the other 19 problems to make rectifications, thus regulating the order of the domain name market. The number of reported problems decreased greatly and good results were made in supervision in 2014.

Number of reported problems

Down by 31%

	1,894	1,575	2,106	1,448
	2011	2012	2013	2014

It opened a Q&A platform for the convenient communication between registrars and users, efficiently and flexibly handled disputes caused by unsmooth communication between them, urged registrars to respond to and solve problems immediately, and guided them to provide up-to-standard services. With the help of the platform, the center coordinated the solution of 73 service conflicts throughout the year, effectively reduced the potential complaints from users with the number of complaints reducing by 37% compared with the same period over last year. This platform became an important tool for the center to supervise the operation of registrars.

➢ Enriching the knowledge base and building a professional service team

To support the open registration of ".公司" and ".网络" domain names, CNNIC added hundreds of items concerning company and network businesses to the knowledge base, and gave special trainings for the service team so that it can acquire new business knowledge and skills quickly and provide professional and accurate answers to users.

➢ Meeting all service targets

In 2014, the national domain name complaint handling center received inquiries, complaints and reports from users through a variety of channels such as telephone, email, fax and messages, answered 38,304 phone calls, replied to 6,085 emails and 462 messages, handled 25 faxes and received 41 visits. The annual SLA indicators were all met and KPI improved steadily, among which customer satisfaction stood at above 93% for five years in a row. It also received many letters of thanks from domestic and overseas users.

👍	Customer satisfaction	**96.86%**
📞	Hotline availability	**97.4%**
🖥	Accuracy of business handling	**100%**
✅	Email response time	**59' 13''**
✉	Message response time	**0.76** Workday

Key indicators of customer service quality

Letter of thanks from users

➢ Improving capabilities and building a highly competent service team

CNNIC focused on developing the professionalism and skills of customer service specialists, established growth profiles for them, documented and analyzed assessment indicators of service quality and business skills such as caller satisfaction, quality assessment result and accuracy rate of replies, and paid consistent attention to the professional ability and service skills of employees. Training programs on business knowledge, professional skills, service skills and oral English were provided to promote the service level of the team throughout the year. The training time per person exceeded six hours per month.

Service skill training

Technological R&D
and Security Assurance

1.Technological R&D

1)DNS resolution technology

➤DNS resolution acceleration software ZoomDNS which is customized based on the operating system

ZoomDNS 1.0 was developed and put into operation in 2014. Through the optimization of the operating system, the resolution capability of the online resolution system was improved by more than tenfold in the same hardware settings. The DNS anti-attack feature was added to ZoomDNS 2.0 which was optimized and upgraded based on ZoomDNS 1.0.

➤Proprietary DNS authoritative resolution software-Zebra

It independently developed and released the DNS authoritative resolution software-Zebra 3.0. DNS service quality was upgraded in an all-round way through technological innovation. Zebra 3.0 features industry-exclusive security features such as "resolution performance irrelevant to query message". From the perspective of TLD service, Zebra 3.0 is superior to commonly used DNS resolution software in terms of resolution performance, security and reliability.

2)DNS security technology

DNS security concerns the security of the entire Internet. In 2014, CNNIC continued strengthening the R&D of DNS security technology and made important achievements in DNS anti-attack and security monitoring.

➤DNS anti-attack device-SDNS-D

CNNIC completed 10 innovation-based DNS anti-attack algorithms with core logic, including the maximum likelihood detection algorithm. Using Gigabit technology and based on the board prototype of FPGA chip, it completed the development of the processing board for DNS anti-attack device 4.0, allowing the device to feature wire-speed processing with a 40G interface and have a throughput up to 60 million QPS. In 2014, DNS anti-attack device successfully withstood 62 attacks.

➤DNS software firewall-SDNS-prime

In 2014, CNNIC launched DNS software firewall SDNS-prime 3.0. By combining cutting-edge technology and traditional business and integrating anti-attack algorithms with computer system architecture, the firewall can process DNS attack massages at wire speed in a 10G high-speed network, supports independent traffic control of the list of tens of millions of domain names and the list of millions of IP addresses, and has intercepted many DNS attacks since it was launched. It provided security assurance for the national domain name operation platform during the APEC Summit in Beijing.

➤DNS security monitoring platform-SDNS-MON

SDNS-MON supports off-line and real-time data access and processing, features a distributed data warehouse based on open-source Hadoop+hive and a real-time computing platform based on storm, and covers all DNS and Internet data business of CNNIC. The real-time data access and distribution system was developed,

shortening data acquisition delay to seconds. It is applicable to inter-city transmissions through public networks and supports distributed message queue. Currently, it collects nearly 100 million pieces of data which are mainly transmitted to hadoop and storm for off-line analysis and real-time computing respectively.

➢ DNS traffic analysis and test system-SDNS-AM

The DNS traffic analysis and test system SDNS-AM 2.0 was developed. Based on the processing limit of the hardware, the system can automatically adapt to different levels of hardware platforms to conduct real-time statistics.

Traffic monitoring results by SDNS-AM

3)Domain name management technique

➢ National domain name management system

In 2014, the national domain name management system optimized the review process by adopting a parallel verification method, thus enhancing the efficiency and improving the user experience of registration applicants. The financial system improved settlement efficiency by using the immediate message processing mechanism and realized real-time display of domain name consumptions through the HTML5 technologies.

Review system architecture
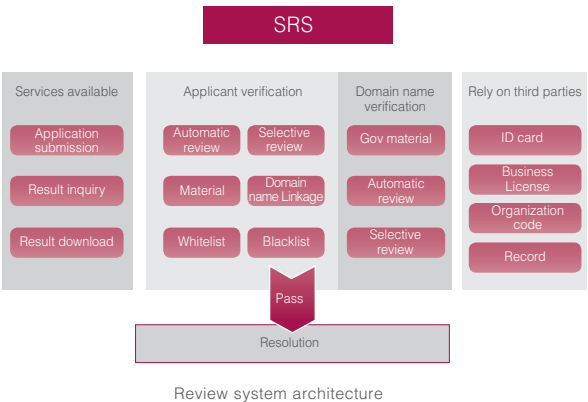
➢ New gTLD management system

In June 2014, the new gTLD management system version 1.0 was put into operation, encompassing the shared registration system (SRS), Whois, DNS, DNSSEC, Data Escrow, and business operation hosting platform. The system supports the operation and hosting of any new gTLD.

New gTLD management system
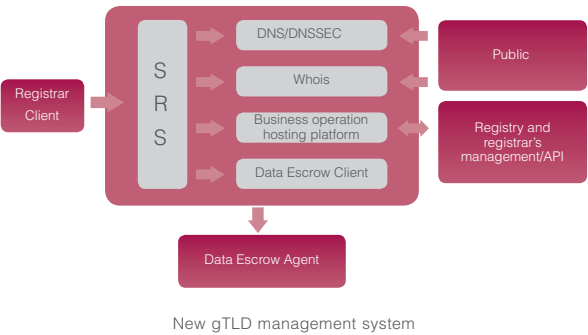
➤ Development of next-generation Whois

In 2014, CNNIC pushed forward the development of Restful Whois, an open-source project of ICANN. The system boasts great extensibility and can be customized according to different policies of registries, offering flexible services for new gTLD registries and registrars.

Restful Whois system architecture
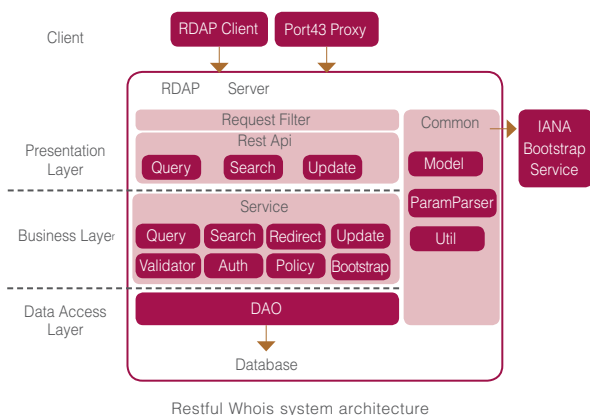
4) Domain data backup and disaster recovery technology

In 2014, CNNIC completed the development of domain data backup and disaster recovery technology, providing technical support for the operation of new gTLD.

➤ Data Escrow Agent

It independently developed the domain data backup system Data Escrow Agent 1.0, encompassing such sub-systems as data receiving, storage and release. The system uses SFTP for data storage and data release, allows flexible addition or deletion of data escrow file verification rules according to needs in the process of data processing, supports XML, CSV and other formats, supports data escrow by any new gTLD registry operators and can effectively ensure the security of domain data.

➤ EBERO (Emergency Back-End Registry Operator)

The EBERO system, independently developed by CNNIC, allows emergency escrow of any new gTLD registry when it breaks down and can complete data and service recovery in a rapid manner. Supporting XML, CSV and other formats and using SAX stream processing technology, the system can analyze XML files quickly and recover millions of domain data (about a 2G text) in five hours, far less than the 72 hours stipulated by ICANN. The system passed the annual review of ICANN in November 2014.

EBERO system architecture
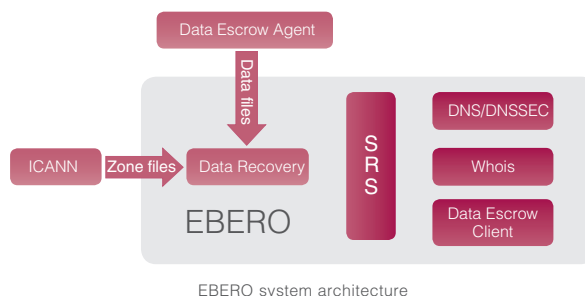
5) IPv4 address database technology

Since 2013, based on its own data CNNIC has integrated public IPv4 address data on the Internet. CNNIC, then technically optimized the IPv4 address database through large-scale network probes and analysis provided by the monitoring nodes deployed across the country, and finally formed a complete and accurate IPv4 address database of China.

Province	%	Province	%	Province	%	Province	%
Beijing	10.75%	Henan	3.37%	Heilongjiang	1.81%	Xinjiang	0.88%
Guangdong	10.69%	Sichuan	3.30%	Shaanxi	1.80%	Gansu	0.71%
Zhejiang	6.07%	Hubei	2.99%	Shanxi	1.79%	Guizhou	0.62%
Jiangsu	6.01%	Hunan	2.96%	Jilin	1.64%	Hainan	0.47%
Shandong	5.78%	Fujian	2.73%	Guangxi	1.61%	Ningxia	0.38%
Shanghai	5.40%	Jiangxi	2.22%	Tianjin	1.19%	Qinghai	0.22%
Liaoning	5.24%	Chongqing	2.12%	Yunnan	1.19%	Tibet	0.14%
Hebei	3.43%	Anhui	2.07%	Inner Mongolia	0.99%	Undetermined	0.43%

Proportion of IPv4 addresses by province

6) Anti-phishing technology

In 2014, CNNIC upgraded the phishing detection algorithm and the platform of the independently developed online phishing detection and identification system. By analyzing the reports to Anti-Phishing Alliance of China (APAC), the algorithm makes full use of the server clustering feature of phishing websites and is able to actively detect and identify phishing threats. The upgraded system can identify online phishing websites with 100% accuracy.

In 2014, CNNIC developed China's first anti-phishing-themed game, and released it together with APAC. Based on years of anti-phishing experience of CNNIC, the interactive game is aimed at allowing users to learn phishing detection skills easily. CNNIC has long been dedicated to the R&D of anti-phishing technology. The independently developed online phishing detection and identification system has detected tens of thousands of phishing websites, which have been effectively handled in cooperation with APAC, thus protecting the assets safety of Internet users. The game was released during

the 1st China Cyber Security Week, attracted a mass of participants and won high praises from well-know media.

Anti-phishing-themed game

Sci-tech program applications and research
"IPv6 address management standard", CNGI 288 program
"Domain name security standard", CNGI 288 program
"Test on the adaptability of networks and websites for IPv6", CNGI commercial program
"Next-generation Internet standard", CNGI commercial program
"Research on physical object modeling and privacy protection in the Internet of Things", funded by the National Natural Science Foundation of China
"Study on key identification technology for heterogeneous marks in the Internet of Things", a program of the youth fund under National Natural Science Foundation of China
"Research on and application of key technologies for acquisition, exchange and identification of traceable food safety data", a program of the science support project under the Ministry of Science and Technology
"Key technologies for the National IOT Identification Management Public Service Platform", a key project of the "1-3-5" planning of the Computer Network Information Center (CNIC), Chinese Academy of Sciences
"Study on backward compatibility technology for heterogeneous marks of the Internet of Things", a program of the youth fund of CNIC
"Study on key common technologies for the Internet of Things and the security industry", funded by the Program for Collaborative Innovation of Enterprises, Universities and Research Institutes of Guangzhou
"Furniture business service system based on the National IOT Identification Management Public Service Platform", a program in cooperation with Foshan city of Guangdong
"Intelligent household appliance service system based on the National IOT Identification Management Public Service Platform", a program in cooperation with Foshan city of Guangdong
"Study on key technology for IOT identification service", a key program of Nansha district, Guangzhou
"Demonstration project for open service platform of wireless urban management", a sci-tech demonstration program of Nansha district, Guangzhou

7)Internet of Things (IOT) technology

According to the 2014-2016 Work Plan for the National IOT Identification Management Public Service Platform and the requirements for supporting the pilot programs released by the National Development and Reform Commission (NDRC), CNNIC completed the construction of nodes in Wuxi and Chongqing. The platform signed contracts with 22 enterprises, worked with JMIT on tracing code registration, and cooperated with Wuxi Research Institute of Fudan University on registering identifications of agricultural products.

In addition to technology research and platform building, CNNIC also actively participated in the development of the national IOT standards and closely followed up on the events held by the working groups of IOT-related technical standards in such international organizations as ITU and IETF.

Node deployment of the National IOT Identification Management Public Service Platform

2.Patents and other intellectual achievements

1)Patents

The number of patent applications filed by CNNIC has grown rapidly for years. By December 31, 2014, it had filed 162 patent applications at home (including 160 for invention patents and 2 for new-type practical patents) and 48 PCT applications.

In 2014, CNNIC conducted patent deployment and patent mining by focusing on ongoing projects and product lines. Among the 40 patent applications filed at home, all of which are for invention patents, 20 were authorized.

Progress in patents

- Domestic application
- Domestic authorization
- PCT application
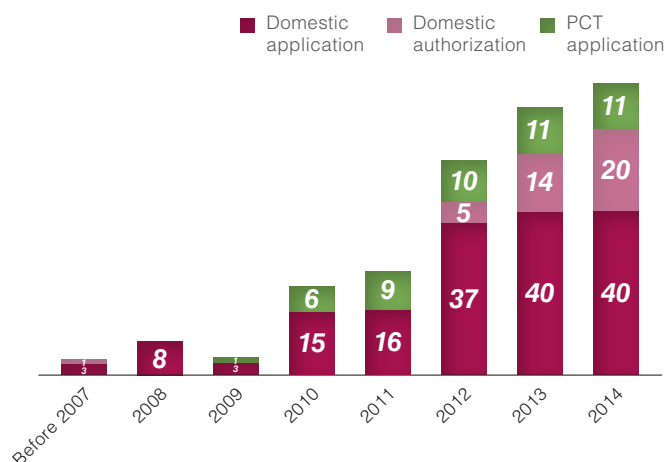
Authorized patents of invention of CNNIC in 2014

| No.	Name	Type	Legal Status
1	A statistical method and device for network access behaviors of Internet users	Invention	Authorized
2	An Internet host naming and communication method and system	Invention	Authorized
3	A method and system for reliable sending of warning emails	Invention	Authorized
4	IP lookup method, system and location information server	Invention	Authorized
5	Detection method and device for distributed denial-of-service attacks	Invention	Authorized
6	Domain name inquiry request handling method, recursive server and domain system	Invention	Authorized
7	Network traffic control method, device, system and server	Invention	Authorized
8	Pseudo-random number generating device and method	Invention	Authorized
9	Physical identifier allocation system, tracing, certification method and server	Invention	Authorized
10	Detection method and device against phishing	Invention	Authorized
11	Quality assessment method and devices for web contents	Invention	Authorized
12	Data processing method, device and system	Invention	Authorized
13	Detection method and device against illegal domain names	Invention	Authorized
14	Detection method and equipment against counterfeit domain names	Invention	Authorized
15	Detection method and equipment against phishing websites	Invention	Authorized
16	Detection method and equipment against phishing websites	Invention	Authorized

No.	Name	Type	Legal Status
17	Detection method and equipment against bad webpages	Invention	Authorized
18	Method for resolution server inquiry and index server in hash network	Invention	Authorized
19	Method, system, terminal and central server for tracing host identification	Invention	Authorized
20	Domain name WHOIS inquiry method and service system based on registration binding	Invention	Authorized

2)Papers

By December 2014, CNNIC had published 109 journal papers and 64 conference papers in total, including eight journal papers and 14 conference papers in 2014.

Progress in papers

- ■ Journal papers   ■ Conference papers
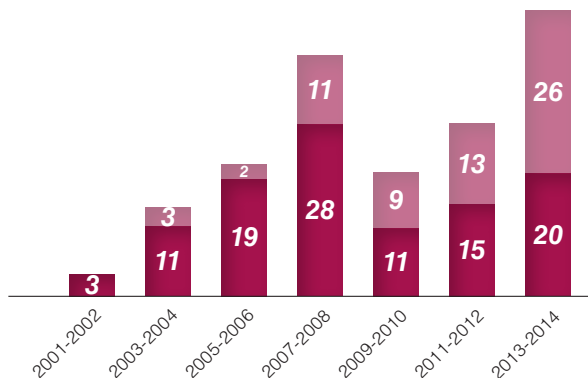
3)Standards

CNNIC has always been devoted to the development of standards. By December 2014, it had completed 42 domestic and international standards, including 7 international standards of IETF, 33 industrial standards of CCSA and two technical reports. Now it is working on the development of 50 domestic and international standards, including 5 international standards of IETF and 45 domestic standards, covering such fields as Internet service statistics, Chinese email, IPv6 address management and coding technology.

Progress in the development of standards

- ■ Number of standard proposals
- ■ Number of released industrial standards
- ■ Number of national standards
- ■ Number of standards released by IETF
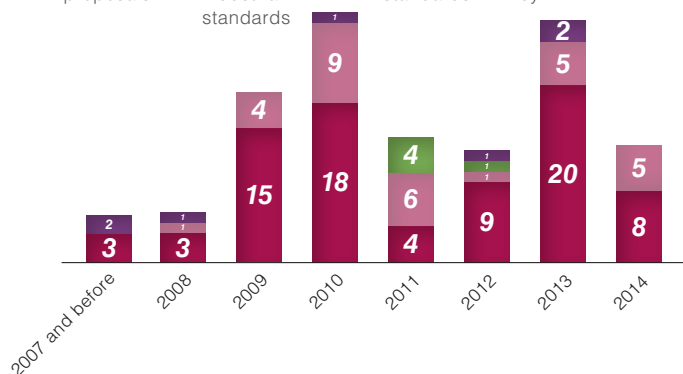
4)Software copyrights

By December 2014, CNNIC had acquired and registered 151 software copyrights, mainly regarding registration, resolution, and security of domain names, IOT identification technologies, etc.

Progress in software copyright registration
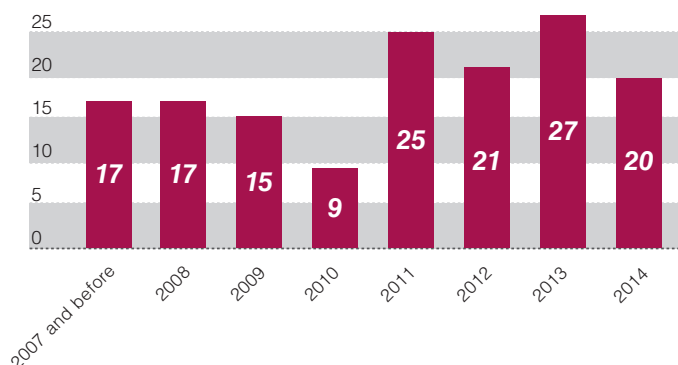
3.Security assurance

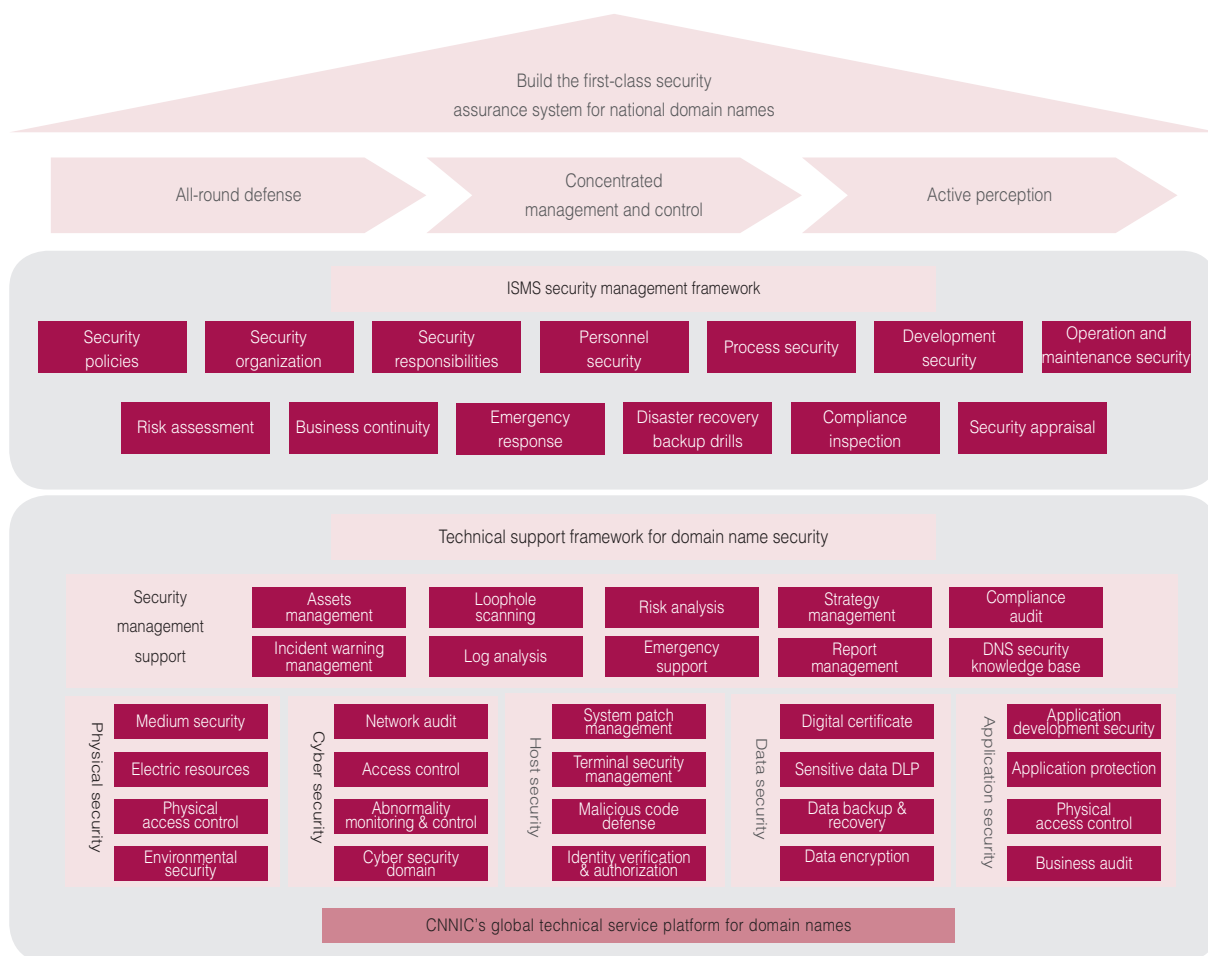## 1)Information security management system (ISMS) certified

In 2014, the information security management system (ISMS) of CNNIC achieved constant improvements in security management level through PDCA operation. The system fulfilled a number of tasks such as risk assessment, annual internal audit, management review, daily inspection and rectification, system document maintenance and security training, and passed the evaluation of China Information Security Certification Center. It has been in use and basically realized electronic operation. It completed the risk assessment work in 2014 as scheduled. As to risks and internal audit problems needing rectification in 2013, it released 45 risk management tasks and 25 rectification tasks, all of which have been completed. CNNIC refined security baseline regulations and core development security systems through continuously improving the ISMS documents and referring to relevant industrial standards. The above work got high praise from China Information Security Certification Center, enabling CNNIC to pass the recertification review successfully.

2)Smooth progress in implementing the plan of information security technology system

In 2014, referring to overseas standards and drawing on the advanced experience of domestic similar operators, CNNIC developed the plan of domain security assurance system in light of national grading protection requirements. The plan illustrates the basic framework of CNNIC's domain name security assurance system from management and technology perspectives, elaborates on security requirements and contents from aspects of security management, physical security, cyber security, host security, application security and data security, and proposes the roadmap for implementing the security assurance system in three to five years.

3)Efficient operation of security emergency response system

In 2014, CNNIC's security emergency response system managed to withstand a number of large-scale DDOS network attacks and ensured the security of the national domain name service system. It successfully guaranteed the security of the websites and domains for major events such as the National People's Conference (NPC), the Chinese People's Political Consultative Conference (CPPCC) sessions, APEC meetings and the World Internet Conference, and efficiently monitored 427 key websites.

Build the first-class security
assurance system for national domain names

All-round defense → Concentrated management and control → Active perception

ISMS security management framework

| Security policies | Security organization | Security responsibilities | Personnel security | Process security | Development security | Operation and maintenance security |

| Risk assessment | Business continuity | Emergency response | Disaster recovery backup drills | Compliance inspection | Security appraisal |

Technical support framework for domain name security

Security management support

| Assets management | Loophole scanning | Risk analysis | Strategy management | Compliance audit |
| Incident warning management | Log analysis | Emergency support | Report management | DNS security knowledge base |

Physical security
- Medium security
- Electric resources
- Physical access control
- Environmental security

Cyber security
- Network audit
- Access control
- Abnormality monitoring & control
- Cyber security domain

Host security
- System patch management
- Terminal security management
- Malicious code defense
- Identity verification & authorization

Data security
- Digital certificate
- Sensitive data DLP
- Data backup & recovery
- Data encryption

Application security
- Application development security
- Application protection
- Physical access control
- Business audit

CNNIC's global technical service platform for domain names

Security assurance capability building in 2014

4)Efficient operation of domain name motioning platform

Domain name monitoring is an important measure to ensure the safe operation of domain name services. In 2014, the monitoring nodes of CNNIC's National Domain Name Security Center increased by 30%, covering core commercial areas of the three telecom operators; the number of overseas monitoring nodes doubled, and the deployments in Russia, Singapore and the United States were completed.
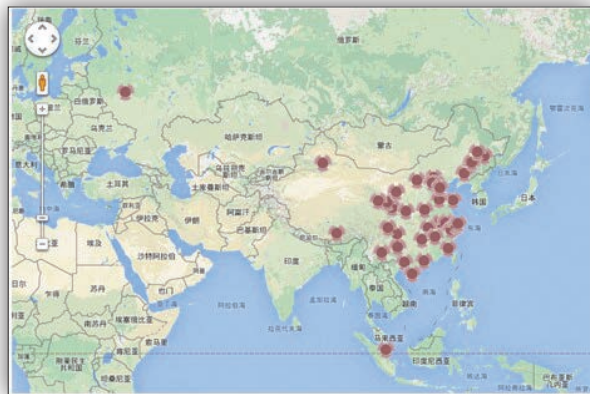
Domain security monitoring platform

The domain security monitoring platform conducts regular monitoring on key domain names, key authoritative servers, key recursive servers and other infrastructure, while detecting and analyzing the global domain name service system in terms of security, performance, malfunction, traffic and configuration. So far, the platform has realized regular monitoring on 13 roots, 37 top-level domains, 392 key domain names and 597 key recursive services. At the same time, it also conducts periodic probes on second-level domains with.CN/.COM/.NET and global recursive DNS visiting.CN root domains.

As the Secretariat of the National Domain Name Security Alliance, CNNIC released the *Report on China Domain Security Status and Trends in 2014*, the third comprehensive annual report on China's domain name service security since the Alliance was established. The report analyzed the security status of root domain name service, top-level domain name service, authoritative domain name service, the software, protocol support and performance of recursive domain name service, as well as domain name infrastructure.

In addition, CNNIC also followed up on key nodes of domain name service and major domain name emergencies, and released investigative reports including the *Time Delay Analysis on Domestic Access to F Root, Time Delay Analysis on Domestic Access to Root Mirrors, 1.2.4.8. Service Status Survey Report*, and *Analysis on Recursive Reflection Incident on December 10, 2014.*

Based on data of the domain name security monitoring platform and the existing analysis on the impact of security incidents, it brought up the analysis indicators for automatic impact and the effective analysis methods, and completed the thesis titled "A Method for Rapidly Evaluating the Impact of DDOS Attacks on Authoritative DNS Service".

To standardize the domain name security assessment, CNNIC's National Domain Name Security Center made great effort to push forward the development of the assessment standards for the domain name system security. The industrial standard *Methods of Testing and Assessing the Security of Domain Servers* it co-developed was already submitted to China Communications Standards Association (CCSA) for approval. As part of the "technical specifications for the operation of domain name system", these standards stipulate the security status check requirements for public telecom networks and Internet-related domain name services, and are applicable to domestic institutions that build or operate domain name service systems and third-party companies that provide domain name security monitoring services, so as to conduct real-time check and assessment on the security of services provided by a domain name system.

Innovative Service

1.Service for new gTLD

The new gTLD service is aimed at protecting the security of new gTLD operation, data and users, offering quality and localized services to new gTLD registries, playing an exemplary role in the domain name sector and promoting the healthy development of the new gTLD sector of China and even the entire Asia-Pacific Region.

CNNIC made active efforts to seek more partners and signed service agreements for nearly 20 top-level domains in 2014. Through participating in many events such as the 2014 New gTLD Road Show, it vigorously promoted the self-regulation and standardization of the new gTLD sector and advanced the building of a sustainable domain name environment.

CNNIC participated as an instructor in the 2014 New gTLD Road Show

New Chinese generic top-level domains ".公司" and ".网络", applied and operated by CNNIC, are open to the general public after smoothly completing open procedures in the Sunrise Period, Priority Period and Landrush Period. Through a series of promotional activities, the number of ".公司" domain name registrations and ".网络" registrations had reached 61,830 and 44,894 respectively by December 31, 2014.

By optimizing review policies and process, CNNIC realized systematic real-name verification, reduced registration costs of users and channels considerably, and improved registration efficiency. Meanwhile, it constantly improved the application environment and promoted mainstream browsers such as 360 and Tencent to support Chinese domain names. It also actively cooperated with domain name registrars and email service providers so as to launch the incentive plan and campaign which advocate the use of Chinese email address, and to attract more people to use ".公司" and ".网络" domain names.

In 2014, CNNIC launched the global road show of the Chinese-language TLD Promotion Program themed "Internet and China in A New Era". During the 2014 FIFA World Cup, in cooperation with Youku, Letv, Sohu and other companies, it organized activities such as "Good Girl at World Cup", "World Cup Predication for Domain Name Investors" and "Models for Chinese Domain Names". After entering the open registration period, it launched WeChat game, "message from Chinese email address" and other activities, which achieved good publicity effects and won the trust of users.

Global road show of the Chinese-language TLD Promotion Program

In 2014, CNNIC assisted new gTLD registries in passing the PDT tests for ".广东" and ".佛山" and incorporating them into the global root domain name system. With the help of CNNIC ".信息" passed PDT tests, too.

2.SDNS domain security solution

1)DNS software and hardware

CNNIC enriched SDNS product mixes, completed the development of DNS caching software based on the demand of China Mobile, and optimized and upgraded the SDNS software and hardware.

SDNS-D.jpg

SDNS-A.png

SDNS-AM.png

SDNS-R.png

SDNS products

Names of the products in the above are SDNS-D dedicated server against DDOS attacks (upper left), SDNS-A authoritative resolution server (upper right), SDNS-AM DNS traffic monitoring server (lower left), and SDNS-R recursive resolution server (lower right).

In 2014, CNNIC developed new customers of SDNS software and hardware, conducted exchanges with over ten customers on product test and development plan, and provided DNS emergency service against DDOS attacks for such institutions as the People's Bank of China, *Liberation Army Daily*, and the Daxing District Economy and Information Industry Commission of Beijing.

2)DNS cloud service

Through full TLD resolution support, SDNS authoritative cloud service achieved features such as intelligent line resolution (China Unicom/China Telecom/China Mobile/CERNET) and interface to bulk API data, and greatly improved the accessibility of products. In 2014, the authoritative cloud service was offered to many state ministries and commissions such as the Ministry of Foreign Affairs, the Ministry of National Defense, the Supreme People's Procuratorate, the Ministry of Supervision, and the Ministry of Culture, and was also used for the backup contingencies of many registrars. Currently, the service has been available for 113,518 domain names.

The SDNS recursive service has won wide recognition from operators. During the nationwide ISP DNS attack on December 10th, some operators contacted CNNIC and took SDNS recursive cloud as their primary emergency backup instrument. In addition, CNNIC built recursive nodes together with Hubei branch of China Unicom, Jilin branch of China Unicom, and Chongqing Cable Networks, so as to expand the coverage of services and lay a solid foundation for business growth in 2015. At present, the data scale of SDNS recursive cloud exceeds 10 billion inquiries per day.

CNNIC highlighted its DNS products at the China Cyber Security Week, attracting wide attention from many government organs.

CNNIC booth at the 1st China Cyber Security Week

3)"NET • TRUST" business

In 2014, CNNIC held a conference in Beijing to launch "Trustable-website Certification Platform" (referred to as "NET • TRUST") and initiate cooperation on certification of defense-related websites. The "NET • TRUST" product is a trustable network certification platform based on Chinese-language ccTLDs built by CNNIC by virtue of years of experience in real-name authentication of domain names and network security management according to the development needs of Chinese-language ccTLDs. "NET • TRUST" services include three links, authentication, website security scanning and DNS security scanning, by which website security can be ensured through an all-round "physical examination". Adopting internationally advanced security encryption and detection technologies, the product helps to enhance the credibility of the network by preventing enterprise websites from being counterfeited. As soon as a website has gone through the three steps, such as applying for certification, CNNIC auditing the application and issuing a digital certificate, and the server deploying a logo, Internet users can view the certification information at any time when browsing the webpage. So far, CNNIC has signed agreements with over ten partners on "NET • TRUST" products.

NET • TRUST

3.China Internet Data Platform

In 2014, China Internet Data Platform upgraded its technology architecture, adopted such technologies as distributed computing cluster, high-performance container and plug-ins, improved the overall data processing speed by about 10 folds and the data receiving capacity to 1,000 per second per computer, and remarkably enhanced questionnaire customization; the mode matching technology (in cooperation with universities) was adopted on the client side for third-party collection of order amount and statistics of e-commerce trade amount.

In 2014, CNNIC developed the Dongfeng-Nissan media planning management system featuring media management and prediction, crossover analysis and many other functions. The system has now been delivered for use and also can assist customers in a variety of testing and training.

Dongfeng-Nissan media planning management system

Research on
Internet Development

1.Research on Internet development

## 1)Deepening statistical survey on Internet development

In 2014, CNNIC released the 33rd and 34th *Statistical Reports on Internet Development in China*. On the basis of maintaining the continuity of studies, the 35th report expounded some new research fields such as O2O, online videos and online games and deepened the study on key industries; increased the samples in key cities and the scope of analysis from more perspectives; and adopted new communication methods and increased publicity on mobile media.

Conference for the release of the *33rd Statistical Report on Internet Development in China*

2)Pushing forward the public-interest surveys and promotions

In 2014, CNNIC completed 11 reports on regional Internet development, two fundamental reports by group and 11 vertical industry-wide reports. It compiled the *Newsletter of Internet Development*, developed and published *China Internet Development Report* jointly with other departments, and accumulated continuous data through vertical surveys in the fields of online videos, mobile games, mobile Internet and social networking apps to provide reference for governments and enterprises' decision-making process. In addition, it disseminated the latest research results through its official blog, Weibo, WeChat and other channels, expanding its influence. It also responded timely to users' questions through emails, Weibo, etc. and increased interaction with users.
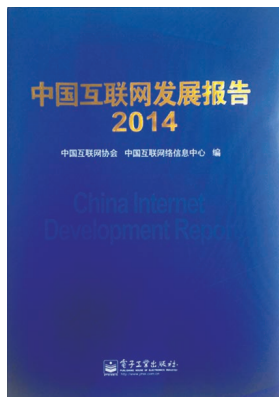
China Internet Development Report   Newsletter of Internet Development

3)Strengthening support for policy studies

In 2014, CNNIC launched comprehensive researches on Internet policies, and completed all the government-entrusted research projects, such as the *Evaluation Report on China's Online Retail Market by the Ministry of Commerce* and the *Research Report on Online Retail Industry Standards*, both having passed the acceptance appraisal; developed and submitted two industry-specific standards after soliciting opinions from experts; collected data for the survey on typical e-commerce enterprises, and submitted a survey report. In addition, it drew four quarterly analysis reports on economic operations in this year, and submitted to the Ministry of Commerce its report on the online retail market in the third quarter with the policy proposals adopted by the General Office of the State Council.

4)Building the Internet development indicators and the statistical indicator system

In 2014, CNNIC completed the design of the indicator system for China's Internet development and prepared *China Internet Development Indicator Report*. It participated in the design of the Internet statistical indicator system, proposed the overall framework of the indicator system encompassing such dimensions as basic resources, technology innovation, industrial economy and development environment, and discussed and completed the operational definitions of more than 100 specific indicators.

5)Carrying out relevant studies on online retailing

CNNIC continued to carry out relevant studies on issues such as online retailing legislation and management. According to the replies and requirements of the Legislative Affairs Commission of the Standing Committee of the National People's Congress and the relevant authorities of the Ministry of Commerce and in combination with the upcoming rules and regulations, it stepped up efforts to revise and improve the design plan for the system of backup rules on transactions via third-party online retail platforms.

2.E-science development studies

CNNIC actively engaged in projects such as China E-Science Development Studies initiated by the Advisory Committee for State Informatization and the Studies on the National E-Science Development Strategy by CAS. Focusing on e-science, technological innovation and other aspects, it conducted in-depth investigations and analysis in line with the core message of the important speech President Xi Jinping made on "Four Initiatives", prepared policy research reports and submitted to competent authorities, which won high recognition. All its projects passed the acceptance appraisal.

International Communication and Open Cooperation

1.Involvement in international Internet communities

In 2014, the United States announced its intention to hand over ICANN management functions, bringing new opportunities and also challenges to the global Internet governance. CNNIC has given full play to its years of experience in international Internet communities and actively engaged itself in international Internet governance organizations and the activities they held.

1)Participation in international Internet governance organizations and conferences

In January 2014, CNNIC researcher Li Xiaodong was elected a member of the Multistakeholder Advisory Group (MAG) under the Internet Governance Forum (IGF), entitled to analyze, give opinions on and publicize the IGF and MAG-related affairs, as well as key nodes, major personnel, target organizations and major events in the related processes.

IANA ICG held the 3rd face-to-face meeting
during the 51st ICANN Meeting in Los Angeles.

In April 2014, researcher Li Xiaodong led a delegation to attend the "The Future of Internet Governance – Global Multistakeholder Meeting (NETmundial)" in Saho Paulo, Brazil, and submitted a number of opinions and recommendations in the meeting, calling for greater attention to developing countries, new participants and capacity building in terms of Internet governance principles, and suggesting promoting the knowledge continuity and update of personnel at international Internet governance institutions.

The future of Internet Governance – Global
Multistakeholder Meeting (NETmundial)

Brazil Summit

In June 2014, CNNIC representatives attended the "World Summit on the Information Society (WSIS) + 10" High-Level Event held in Geneva, Switzerland, and held a seminar themed "new concepts of ICT capability building" discussing the objectives, contents, methods and objects of capacity building and calling for a capacity building mode that involves multi-stakeholders and aims to improve the soft power. The seminar was attended by organizations and institutions such as the Internet Society (ISOC), Oman's Ministry of Education, the Russian national top-level domain registry, and the Asia-Pacific Network Information Centre (APNIC). At the event, CNNIC representatives held talks with the attendees from other countries and institutions and exchanged views on the cooperation in information and communication, and other aspects.

CNNIC representatives at the WSIS +10 High-Level Event

In September 2014, CNNIC representatives participated in the 9th meeting of UN Internet Governance Forum in Turkey. During the Forum, CNNIC, for another time, acquired the approval for holding the IGF thematic seminar "Improving Internet Architecture to Drive Consumer Trust". Many experts in Internet governance gathered at the seminar to discuss how to push forward the Internet infrastructure development, improve the Internet governance structure, and thus enhance Internet users' trust. CNNIC held the seminar at IGF for two consecutive years.
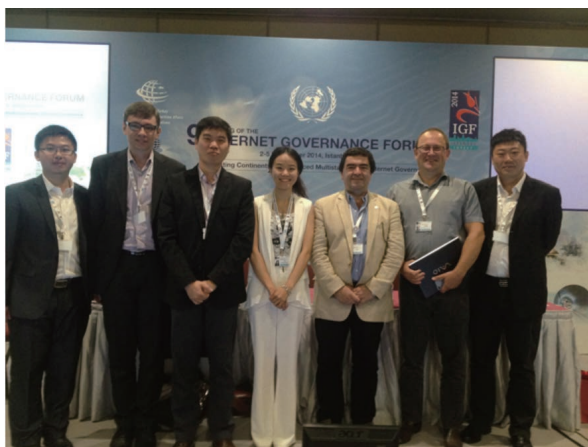
CNNIC at the 9th meeting of UN Internet Governance Forum (IGF)

At IGF

In addition, CNNIC also got the approval for holding the Asia-Pacific Region Internet Governance Forum (APrIGF), which was successfully convened in July 2014 through the teleconference system.

2)Participation in IANA ICG meetings

In July, 2014, researcher Li Xiaodong, as the only Chinese representative, was elected into the IANA Stewardship Transition Coordination Group (ICG). CNNIC then made deployments for a special program in this regard and assigned dedicated personnel to collect information and conduct policy studies so as to keep up with the latest trends and give out a voice at proper time.
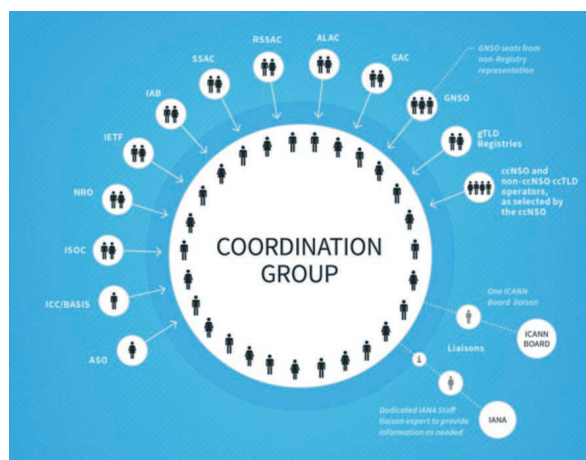
IANA Stewardship Transition Coordination Group (ICG)

In response to international major events such as IANA stewardship transition and ICANN's "going global" initiative, CNNIC, under the macro guidance of the state, refined China's strategy for ICANN's such initiative, determined the key international organizations it planned to participate in with great efforts, drafted a series of participation plans, and completed more than ten policy reports.

3)Exchanges with international IP address communities

CNNIC actively exchanged with international IP address communities, participated in relevant policy development, held office in Asia Pacific Network Information Center (APNIC), and expressed views that were conducive to China's Internet development during policy discussions and exchanges. It delivered a work report on its IP addresses at the APNIC Conference in 2014, introduced the latest development of China's Internet and its own achievements, and shared experience in IP address management, thus escalating its international influence. Meanwhile, it discussed with APNIC executives and experts on IPv6 development, cross-RIR IPv4 transfer policy and other issues in a bid to promote the progress in IPv6 address allocation.

APNIC 38 in Australia

In April 2014, CNNIC organized some members of China IP Address Allocation Alliance to attend the APNIC external investigator seminar where they spoke clearly China's demands on Internet development and its problems and expectations in IP address application and use. In June 2014, it mobilized all members to participate in the biennial online survey of APNIC in an effort to express the voice of the Chinese Internet communities.

4)Serving as the secretariat of an international organization

CNNIC has served as the secretariat of Asia Pacific Top Level Domain Association (APTLD) since July 2013. In 2014, the secretariat carried out its work in an efficient and orderly way, and won high praise from the board and the members for its routine work like document preparation and filing, virtual and onsite conference support, official website and mailing list maintenance. In addition, it also played an active role in supporting the board's activities, assisting managers with their work, and undertaking internal communication responsibilities.

It spearheaded the annual election of the board, held 12 conference calls and eight special/emergency meetings, drafted and revised documents such as *APTLD Policy Development Process, Preparation Guide for Members' Assembly* and *Analysis on the Composition of Members,* and completed various tasks including APTLD and board policy and document aggregation, investigations into teleconference system providers and surveys on new gTLD in Asia-Pacific Region.

APTLD Newsletter released by CNNIC on a weekly basis

2.International programs

1)Asia-Pacific Internet Resources Capacity Building Program

In 2014, the Asia-Pacific Internet Resources Capacity Building Program, applied by CNNIC jointly with the Internet regulators of South Korea, Russia, Indonesia, Laos and Malaysia, stood out from 218 applicants and became one of China's two programs funded by APEC. Through the concerted efforts of domain name registries and different countries' institutions engaged in domain name system development and management under the framework of APEC, the program aims to conduct researches in such fields as domain name security management, IP address management, domain name system security extensions (DNSSEC) and domain name system defense, build a world-class Internet operation platform and promote its application, and enhance the capacity and influence of the Asia-Pacific Region in the development of international standards.

2)Incorporating ".公司" and ".网络" into the global Internet root name system

After more than three years of efforts, ".公司" and ".网络" were formally incorporated into the global Internet root name system in early 2014, greatly escalating China's influence in the global Internet community, especially in the domain name field. Through tough negotiations with ICANN, CNNIC resolved long-standing problems with regards to registration data, domain name conflict and data transfer, and finally made Chinese-language TLDs ".公司" and ".网络" open to the public for registration.

3)EBERO annual review

ICANN and CNNIC signed a cooperation agreement on EBERO in 2013. Against such a backdrop, CNNIC kept quarterly communications with ICANN in every aspect. In November, CNNIC received the long-distance annual review of ICANN's technical team. Thanks to its great efforts in remote presentation of work, technology, business process and performance of duties, CNNIC passed the review and won high praise from ICANN.

3.International communication and visitor reception

1)International communication

In February 2014, CNNIC representatives participated in the 9th meeting of the Internet of Things Global Standards Initiative (IoT-GSI) by the International Telecommunication Union (ITU), and delivered a thematic report.

During ICANN 51 in Los Angeles in June, CNNIC reached agreements with ZADNA (.za Domain Name Authority). Vika Mpisane, CEO of ZADNA, expressed his intention to discuss the strategic partnership with CNNIC and sign a memorandum on cooperation, creating good conditions for CNNIC to expand operations.

In June, CNNIC delegates attended the 3rd Annual World Congress of Emerging InfoTech and delivered a report.

The 3rd Annual World Congress of Emerging InfoTech

In July and November, CNNIC attended IETF 90 and 91 meetings and delivered reports.
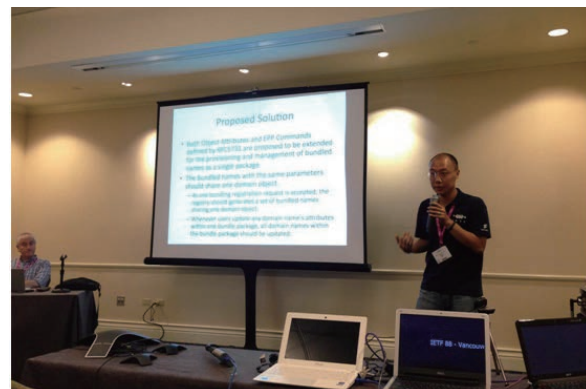
IETF meeting

In October, CNNIC delegates attended the conference of the APEC Telecommunications and Information Working Group (APEC TEL) and delivered a report titled "Deployment of Multi-language E-mail Address Technology".

The APEC TEL Conference

In October, CNNIC held the APEC workshop for the deployment of multi-language email address technology. Experts from China, the United States, Russia, Canada, South Korea, Thailand, New Zealand and other countries shared experience in this regard, and proposed recommendations for the future development. The workshop achieved good results. Professor John Klensin and CNNIC researcher Qian Hualin, both inductees of the Internet Hall of Fame, recalled the development and deployment process of multi-language email address and called for joint efforts of all stakeholders to promote the application of the new technology along with delegates from APEC member economies.

APEC workshop for the deployment of multi-language email address technology

In November, CNNIC and the Russian national top-level domain registry announced the intention to deepen cooperation in such fields as IDN, multi-language email address technology, and personal exchanges, and lift their strategic partnership to a new level.

In December, CNNIC and Korea Information Security Agency (KISA) held the second strategic cooperation meeting in Seoul. The two sides shared their respective progress in major fields such as new gTLD, internationalized email development, DNS operation and management, and IPv6 deployment, and decided to focus on cooperation in Internet governance in 2015. The meeting laid a good foundation for their diversified cooperation in the future.

A group photo taken on the CNNIC-KISA Internet exchange seminar

CNNIC-KISA Internet exchange seminar

On November 21, the 1st World Internet Conference Wuzhen Summit was concluded. CNNIC, as a joint organizer, worked closely with other organizations and fulfilled the preparation tasks for the summit within just three months. It assigned elite personnel to ensure the safe operation of the website, and invited heavyweights on the international Internet arena to attend the summit, including Rod Beckstrom, former ICANN president, Werner Zorn, father of German's Internet, and Gihan Dias, inductee of the Internet Hall of Fame. During the Summit, CNNIC organized a high-level dialogue themed "an interconnected world shared and governed by all", inviting delegates at the World Internet Conference to exchange views on the international Internet development

and governance. During the Summit, CNNIC hosted the Global Internet Governance Forum, providing a platform for developing countries, developed countries and related international organizations engaged in Internet governance to communicate on the common rules of the international Internet governance, mutual trust and cooperation, and multi-stakeholder governance model.

A group photo taken on the Global Internet Governance Forum of the World Internet Conference

2)Visitor reception

In February, ICANN President Fadi Chehade visited CNNIC. The two sides exchanged views on ICANN's internationalization, Internet governance and other topics. The President said that ICANN would strengthen communication with the related sides of China through the ICANN Engagement Center in Beijing, and hoped to deepen and expand its cooperation with CNNIC.

In April 2014, IETF and IAB (Internet Architecture Board) veteran John C. Klensin and Internet expert Tony Hain, along with others, visited CNNIC and delivered lectures on root server technology and operation to CNNIC staff.

4.Establishment of labs

1)National Engineering Lab for Naming and Addressing

In accordance with the proposals in the *Opinions on Construction and Development of Next Generation Internet during the 12th Five-Year Plan Period* issued by the National Development and Reform Commission and the *Planning for the Internet Industry during the 12th Five-Year Plan Period* by the Ministry of Industry and Information Technology, CNNIC worked with six other organizations to establish the National Engineering Lab for Naming and Addressing, with a view to improving China's such technologies, ensuring the security of national networks and information, accelerating technological innovation in network and information security, and boosting the upgrading of the Internet industry.

On January 25th, 2014, the founding ceremony of the National Engineering Lab for Naming and Addressing and the conference on the inauguration of the council and the technology committee were held in Beijing. Members of the council were elected and the articles of associations were adopted at the conference. The lab would conduct both practical studies and forward-looking research in an all-round way and propel domestic and international cooperation in the Internet industry through reforming the management mechanism and enhancing team building. It will greatly improve the safe operation capability of China's Internet, promote and safeguard the efficient and safe operation of domain names, and provide powerful technological support for the flourishing of the Internet industry.

Establishment of the National Engineering
Lab for Naming and Addressing

2)DNSLAB

DNSLAB, launched by CNNIC, was among the 8th batch of Zhongguancun Open Labs upon the approval of the Administrative Committee of Zhongguancun Science Park in December 2013. Officially granted with the license in 2014, DNSLAB will pool innovation resources in Internet fundamental technology, deliver services to more public sectors, and push forward research and cooperation in Internet-related fields. It passed the one-year performance evaluation of Zhongguancun Open Lab and received funds of RMB500,000 in one lump sum.

DNSLAB certified as Zhongguancun Open Lab

Upholding the growth concepts of "openness, mobility, cooperation, and competition", DNSLAB has refined its operational mechanism and management system, concentrated efforts on realizing academic and commercial output in three key areas of Internet (namely, data analysis, technical system of fundamental resources, security assurance of these resources), and played an active role in promoting cooperation between government agencies, research institutes, universities and the Internet industry.

By the end of 2014, all projects in the first phase had been completed, bringing in 36 theses including 14 SCI/EI papers, 11 patents, nine draft standards, four software copyrights and 10 technical reports.

Technical reports	10
Theses	22
Draft standards	9
Patents	11
SCI/EI papers	14
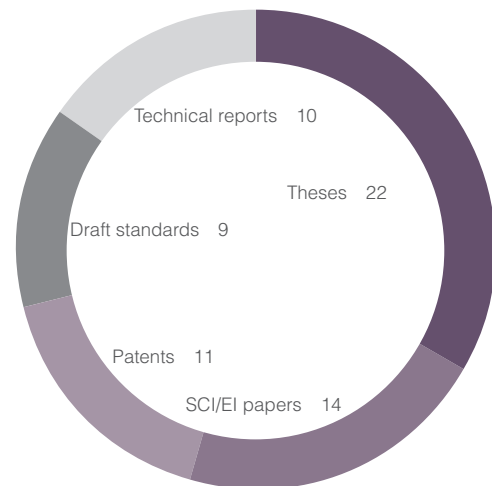
Outcomes of the first-phase projects in 2013

3)CNNIC-Farsight Internet Data Joint Lab (CFID)

On August 27, CNNIC and the Farsight Security of the United States signed an agreement, announcing the establishment of CNNIC-Farsight Internet Data Joint Lab (CFID) dedicated to in-depth research on relevant technology, application and security in big data.

Relying on the rich experience and strengths of CNNIC and Farsight Security in Internet data analysis and especially the R&D of domain name system, CFID will collect a raft of information, develop data mining technology and conduct research in Internet data, especially data related to basic Internet resources such as domain names and IP addresses, dedicate itself to big data analysis, build security capabilities based on Internet data, gain greater competence in detecting and predicting new threats against cyber security, reduce the occurrence of false judgment about threats, and provide a range of cyber security solutions.

CNNIC-Farsight Internet Data Joint Lab (CFID) founded

5.Positions in international and domestic organizations

1)Positions in international organizations

International organization	Name	Position
ICANN	Li Xiaodong	Member of Security and Stability Advisory Committee (SSAC), representative of the IANA Stewardship Transition Coordination Group (ICG)
ICANN	Wang Wei	Co-chairman of the Chinese working group, member of RSSAC preliminary conference, coordinator of variant Chinese character research team
ICANN	Han Liyun	Representative of ccNSO Member Registry
ICANN	Zhu Hongbin	Voting member of GNSO registry group, member of ALAC New gTLDs/IDN Working Group
ICANN	Han Liyun	Observer of Cross Community Working Group (CWG) to develop an IANA Stewardship Transition Proposal on Naming Related Functions
ICANN	Shen Shuo	Expert of HSTLD Working Group, DSSA Working Group, and Tech WHOIS Working Group
ICANN	Zhou Linlin	Member of Chinese Script Generation Panel (CGP)
WEF	Li Xiaodong	Member of Internet Security Council
IGF	Li Xiaodong	Member of Multistakeholder Advisory Group (MAG)
IETF	Yao Jiankang	Member of Applications Area Directorate (APPSDIR)
CDNC	Qian Hualin, Wang Wei	Co-chairman, secretary general
APIRA	Liu Bing	Chairperson
ISOC	Li Xiaodong	Member of ISOC Advisory Committee
OASIS	Shen Shuo	Member of TOSCA Technical Committee, and Identity in Cloud Technical Committee
International Journal "Journal of Advances in Internet of Things (AIT)"	Kong Ning	Member of Editorial Board
International Journal "Journal of Modern Internet of Things (MIOT)"	Kong Ning	Member of Editorial Board
International Journal "Physics, Computer Science and Engineering (PCSE)"	Kong Ning	Member of Editorial Board
APNIC	Zhao Wei	Member of Executive Board
APNIC	Shen Zhi	Co-chairman of NIR Working Group
APTLD	Chen Ting	Vice President
APEC TEL	Yao Jiankang	Member of Working Group

2)Positions in domestic organizations

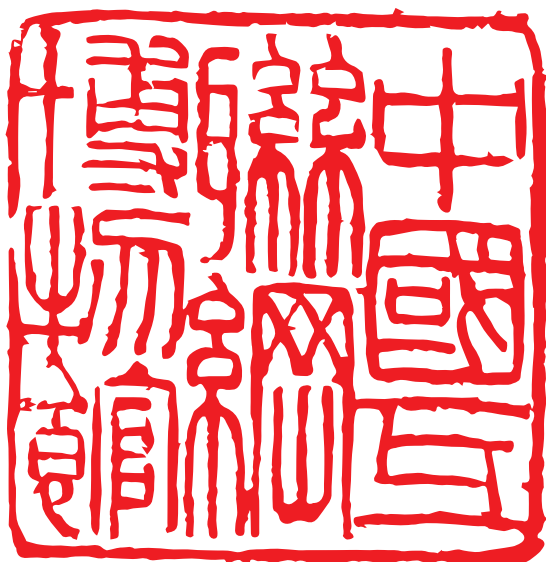| Domestic organization	Name	Position
Internet Society of China	Huang Xiangyang, Mao Wei, Qian Hualin	Vice President of the 4th Council
Internet Society of China	Li Xiaodong	Executive member; deputy director of the 4th Network and Information Security Committee
Anti-Phishing Alliance of China	Qin Lin	Secretary General
Broadband Strategic Alliance	Liu Bing	Vice President
China Smart City Industry Alliance	Liu Bing, Shen Shuo	Vice President
China Smart City Industry Alliance	Kong Ning, Tian Ye, Wang Shengkai	Technology expert
Mobile Internet Committee of Internet Society of China	Liu Bing	Member
China Communications Standards Association	Shen Shuo	Deputy head of TC10 WG1
China Communications Standards Association	Kong Ning	Deputy head of TC1 WG4
CCF Task Force on Big Data	Shen Shuo	Member
China Broadband Wireless IP Standard Group	Kong Ning	Consultant expert
Security Alliance of National Domain Name	Hu Anlei	Secretary General
China Association of Communications Enterprises	He Zheng	Technology expert
Beijing-Tianjin-Hebei Youth Talent Cooperation Steering Committee	Li Xiaodong	Expert member
The Chinese Association of Young Scientists and Technologists	Li Xiaodong	Executive member; Secretary General of the Information and Electronic Science Committee
Association of Communications Across the Taiwan Straits	Li Xiaodong	Member of the 2nd Council

Corporate Social Responsibilities

In 2014, centering on its responsibilities in aspects of operation, management and service of Internet fundamental resources, technological R&D and security assurance, Internet development research and consulting service, as well as technology exchanges and open cooperation, CNNIC constantly improved social responsibility management, enriched the connotation of responsibilities, practiced the social responsibility concept of "Responsibility to the Country, Benefits to the Society and Harmony among People", and fulfilled its social responsibilities in an all-round way.

1.Industry-wide involvement

1)Preparations for the building of China Internet Museum (CIM)

To celebrate the 20th anniversary of China's fully functional access to the world Internet, CNNIC initiated the proposal of building China Internet Museum (CIM), the first Internet-themed museum in China, and took the lead in the planning and preparation for the museum, winning wide acclaim in the industry and getting high praise from experts.

As a place recording the development trace of China's Internet and a museum for every Internet user, CIM aims to be an open and interactive online platform that encourages everyone's contribution, and with the help of diverse technologies records and presents many significant events, precious items, typical persons, ideas and concepts, technologies and applications, innovative results, and relevant enterprises and institutions, so as to spread and share Internet knowledge, culture, achievements and even the Chinese dream with Internet users.

The construction of China Internet Museum kicked off on March 7, 2014

Stamp of China Internet Museum designed by calligraphers

Soliciting Internet-related materials for CIM on http://internet.cn

2.Community harmony

1)Care for the next generation

In May 2013, through the Internet Society (ISOC)-funded project for improving the teaching level of Beijing Daxing Chengxin School with the help of the Internet, CNNIC built multimedia classrooms and network systems for this school in Daxing district. In 2014, relying on its strengths in technology, CNNIC continued providing technical support and consulting service for the school to help it better use the Internet.

In May 2014, CNNIC organized employees to donate books, stationeries and sport articles to the Shuimowan Hope Primary School in Hebei. Before the Children's Day, CNNIC representatives visited the school, extending care and concerns to the students and teachers.

Public experience exhibition themed "Cyber Security around You" at the 1st National Cyber Security Week

Salon on Internet fundamental resources and cyber security held by CNNIC

CNNIC visited Shuimowan Hope Primary School before the Children's Day

2)Internet knowledge outreach

On November 24th, 2014, the public experience exhibition themed "Cyber Security around You" at the 1st National Cyber Security Week jointly hosted by the Office of the Central Leading Group for Cyberspace Affairs and other ministries and commissions kicked off at China Millennium Monument. CNNIC built its booth centering on DNS knowledge, new gTLD, DNS security status, anti-phishing websites and other topics, held a special salon on Internet fundamental resources and cyber security, and interacted with Internet users on site and through online platforms like Weibo and WeChat in a bid to spread Internet knowledge among the public.
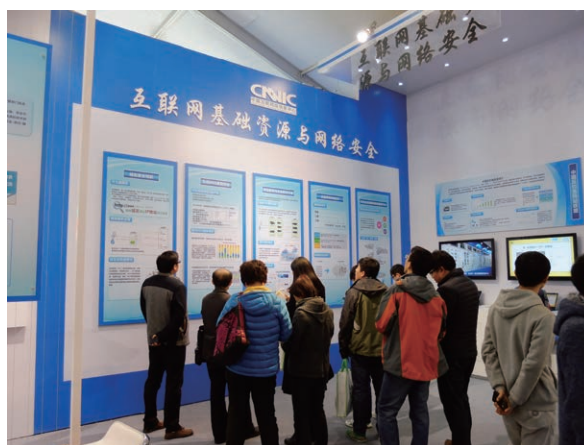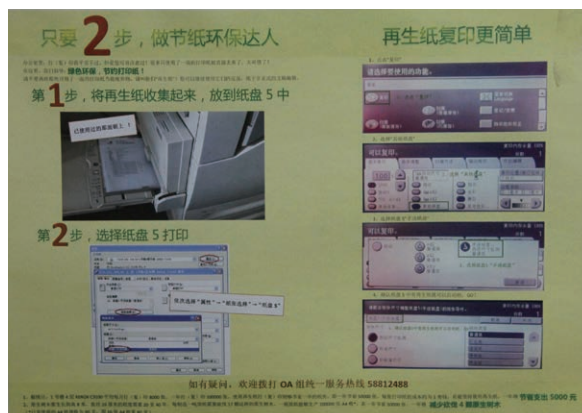

CNNIC booth at the 1st China Cyber Security Week

3.Environmental protection

1)Green office

CNNIC has always advocated green, low-carbon and energy saving concepts in daily operation and strengthened the management of air-conditioning, heating and lighting systems at workplace to save energy; refurbished workstations, increased green plants and optimized green office space; implemented green procurement and reduced the energy consumption of office supplies and facilities; encouraged employees to print on both sides and use less papers, and organized them to participate in the "practice frugality" name-signing activity to enhance their awareness of energy conservation.

Tips on saving paper in office

Beautiful office environment with green plants

Reminders on energy conservation

Integrated Management

1.Talent team

1)Overall situation

In 2014, CNNIC had a total of 346 employees with the average age as 30. Out of them, 57% had a master's degree or above, 10% returned from overseas; and 65 were senior professionals, 8 postgraduate tutors and 2 doctoral tutors. A team composed of high-quality, young and highly educated talent has taken shape.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of employees (regular employees)	7	8	13	15	45	56	46	97	121	161	219	223	210	246	264	280	298	346
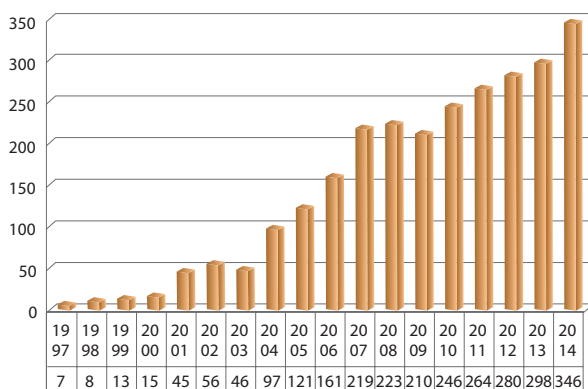
Number of employees (regular employees) of CNNIC over the years

2)Team building

➤Systematic talent fostering

In 2014, CNNIC further improved the talent fostering model which focused on key staff and covered all employees, in a bid to facilitate the growth of employees. The talent team building pattern featured a team of backbone talents in echelon, flat talent management, expert-level work standards, comprehensive capability development, and internal communication in a friendly manner. The systematic talent fostering became more prevailing.
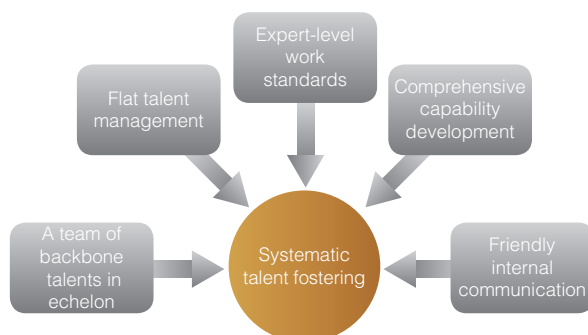
• A team of backbone talents in echelon

In 2014, CNNIC implemented a plan to count and cultivate key staff in all departments. It fostered a group of key staff members at core posts and helped high-potential employees grow into key staff members. Some of the key staff members and high-potential employees were assigned to basic level management positions.
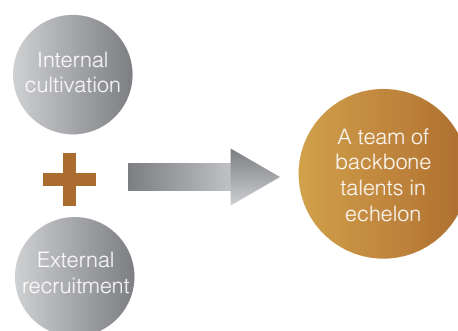
• Flat talent management

Following the general trend of flat talent management, CNNIC further flattened its organizational structure and streamlined the reporting hierarchy in 2014. It advocated full communication and collaboration between managers of different levels and employees, made further exploration on the project-based talent management mechanism in aspects of technological R&D, operation and management, and business development, and formed a basic structure featuring project-based staffing. Talent management was further flattened.

• Expert-level work standards

In 2014, CNNIC raised work standards for its employees, requiring them to do their work up to expert standards. Expert-level teams were gradually built in the fields of technological R&D, international communication, operation and management, business management, etc. All business segments and functional areas made outstanding performance up to expert-level standards. The job rotation system of managers in local units, interest groups across administrative teams, cross-department seminar, micro-classroom and micro-sharing sessions effectively helped the staff in different business segments uplift their work standards.
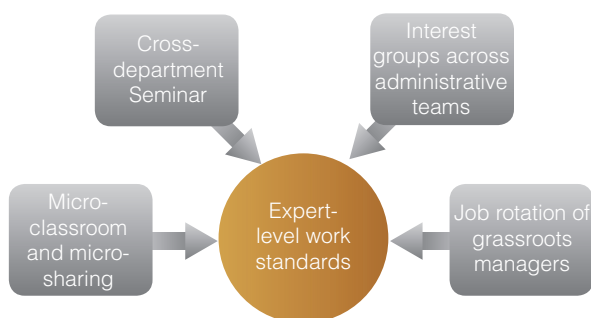
• Comprehensive capability development

In 2014, CNNIC placed great emphasis on comprehensive abilities in selection and allocation of new employees, and highlighted the development of comprehensive abilities in staffing and training in combination with the development trends of Internet. An orientation mode integrating one-to-one training on the organizational level, departmental tutoring and self-learning was formed to improve the comprehensive abilities of newcomers. More than 95% new recruits passed the probation appraisal.
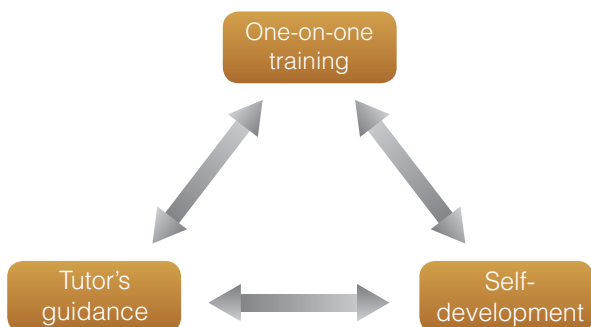

• Friendly internal communication

In 2014, CNNIC advocated a friendly internal communication mechanism centered on problem solving, greatly promoting the communication and cooperation among functional areas and business segments, and improving the work efficiency.

➤ Standardized internal mobility

In 2014, in combination with the systematic talent fostering policy, CNNIC highlighted the rationalization of internal mobility, conducted both recruitment and internal job transfers with vigorous efforts, and realized employee mobility between business departments, functional areas and business segments. The internal mobility process was further standardized.
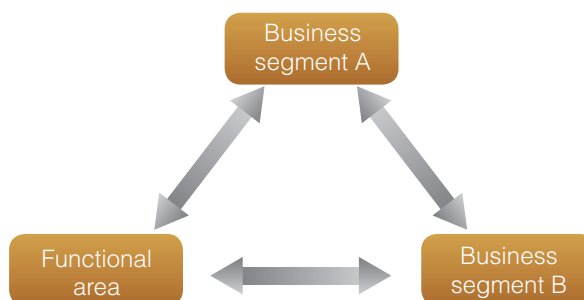
➤ Employee security system

In 2014, CNNIC effectively advanced the construction of the employee security system, continued to pay insurance expenses stipulated in local rules and regulations as well as the expenses of commercial insurances including personal accident insurance and critical illness insurance for its employees. In addition, it set up a rescue plan for special circumstances, bought personal accident insurance for the employees who worked overseas, and continuously promoted the medical insurance plan for employees' children, thereby benefiting the children and families of more employees. The comprehensive employee security system has contributed to the stability and sustainable development of CNNIC's talent team.

➤ Caring for employees' physical and mental health

In 2014, CNNIC organized annual physical examinations for all employees and their families and invited traditional Chinese physicians to hold healthcare lectures and make diagnosis. Special care and support were available for employees with serious illness.

➤ Continuous care for the growth of female employees

In 2014, CNNIC advocated care for the growth of women employees and helped them properly handle the relations with parents and families and succeed in their career. In addition, the assistance plan for the growth of women was also initiated.

2.Brand culture

In 2014, CNNIC further advanced the construction of brand culture, consolidated the brand strategy as a world-class Internet information center, a professional and responsible service agency, straightened out the brand architecture and brand system, and energetically improved and promoted brand culture construction both internally and externally. It worked out its advantages and positioning in overall brand, straightened out the brand-related work according to its own overall brand strategy, completed brand survey reports, and carried out the internal construction and maintenance of the brand. According to the actual brand promotion situations, it constantly regulated and adjusted brand materials and carriers, optimized the visual image, and developed brand culture products in light of the needs and features of CNNIC's services.

Brand Communication Design

3.Work of the General Party Branch

In 2014, under the leadership of the higher-level party committee, the General Party Branch of CNNIC continued to carry out its work in compliance with the requirement of "organization development should be guaranteed; business should be promoted; decisions should be made through brain storming; a platform should be established for public welfare activities; and ideological education should be strengthened". Based on this requirement, the General Party Branch organized a series of activities with accurate theme, elaborate plan and novel form, which achieved effective results. Meanwhile, it provided guidance on the work of the Youth League branches and the labor union.

1)Adhering to the high standard for party member development and ensuring the advanced nature of the party members

In 2014, the General Party Branch adhered to the high standard for party member development, focused on development of key staff, admitted 4 key staff including the supervisor into the CPC (eight candidates became full members), thereby effectively ensuring the advanced nature of the Party. Currently, over two thirds of the key employees in CNNIC are members of the CPC, and they play a pioneering and model role.

2)Strengthening ideological construction and improving the political and theoretical level of Party members

In 2014, the General Party Branch organized Party members and carders to earnestly learn the speeches made by President Xi Jinping, the spirit of winners of "two bombs and one satellite meritorious service medals", the core message of the 4th Plenary Meeting of the 18th Standing Committee of the CPC Central Committee, and the requirements mentioned in the speeches made by Lu Wei, Director of the Cyberspace Administration of China, requiring them to combine these messages with the actual work of CNNIC and conduct the work under their guidance.

Salons of the Party Branch

3)Activities with accurate themes and novel forms

To celebrate the 20th anniversary of China's Internet era, the General Party Branch organized a salon themed "Dedicate Youth to Internet", which presented the development trace of China's Internet and its extensive and profound impacts on the progress of the Chinese society, and called on everyone to engage in the initiative of recording China's Internet development.

In July, the Office of the Central Leading Group for Cyberspace Affairs organized a speech contest themed "practicing Internet spirit, building an Internet power" to celebrate the 93rd anniversary of the CPC's founding. The representative of CNNIC made a sincere and passionate speech titled "I Love My Country" and won a second prize.

Director Lu Wei presenting a certificate to the prize-winner of CNNIC

"Dedicate Youth to Internet" salon to celebrate the 20th Anniversary of China's Internet Era

Appendix

1.Overall situation of China's Internet in 2014
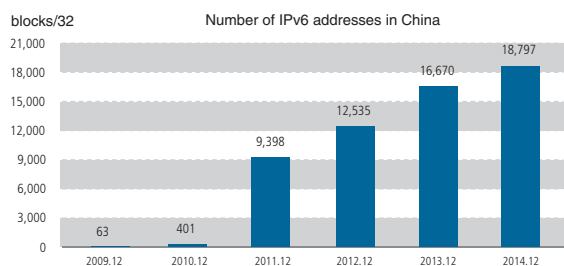
1)Scale of Internet users

By December 2014, China had 649 million Internet users, with 31.17 million new ones. The Internet penetration rate reached 47.9%, up 2.1% over that by the end of 2013.
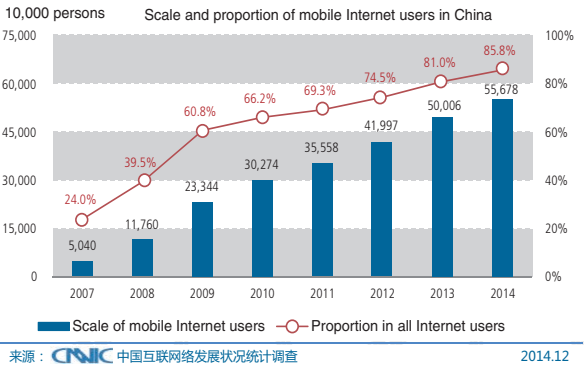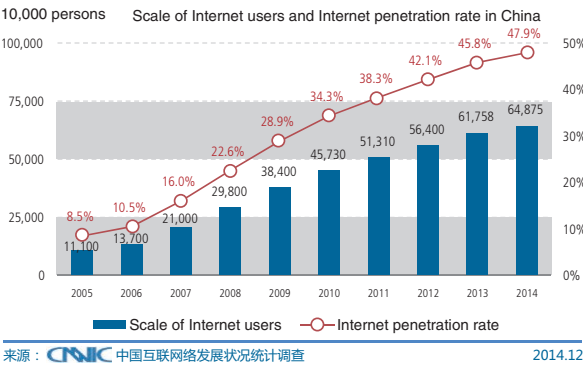

2)Internet fundamental resources

Comparison of China's Internet fundamental resources from December 2013 to December 2014

	Dec. 2013	Dec. 2014	Annual increment	Annual growth rate
IPv4	330,308,096	331,988,224	1,680,128	0.5%
IPv6 (blocks/32)	16,670	18,797	2,127	12.8%
Domain name	18,440,611	20,600,526	2,159,915	11.7%
Including .CN domain name	10,829,480	11,089,231	259,751	2.4%
Website	3,201,625	3,348,926	147,301	4.6%
Including .CN website	1,311,227	1,582,870	271,643	20.7%
International Internet bandwidth (Mbps)	3,406,824	4,118,663	711,839	20.9%

Number of IPv6 addresses in China

blocks/32

Number of IPv4 addresses in China
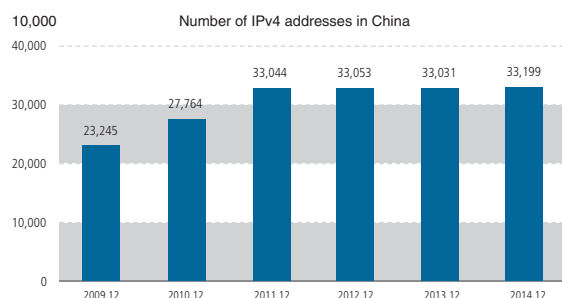
10,000

3) Network applications

Utilization ratio of network applications by Internet users in China from 2013 to 2014

Applications	2014		2013		Annual growth rate
	Number of Internet users (10,000)	Utilization ratio of Internet users	Number of Internet users (10,000)	Utilization ratio of Internet users	
Instant messaging	58,776	90.6%	53,215	86.2%	10.4%
Search engine	52,223	80.5%	48,966	79.3%	6.7%
Online news	51,894	80.0%	49,132	79.6%	5.6%
Online music	47,807	73.7%	45,312	73.4%	5.5%
Online video	43,298	66.7%	42,820	69.3%	1.1%
Online games	36,585	56.4%	33,803	54.7%	8.2%
Online shopping	36,142	55.7%	30,189	48.9%	19.7%
Online payment	30,431	46.9%	26,020	42.1%	17.0%
Online literature	29,385	45.3%	27,441	44.4%	7.1%
Online banking	28,214	43.5%	25,006	40.5%	12.8%
E-mail	25,178	38.8%	25,921	42.0%	-2.9%
Microblog	24,884	38.4%	28,078	45.5%	-11.4%
Travel booking	22,173	34.2%	18,077	29.3%	22.7%
Group buying	17,267	26.6%	14,067	22.8%	22.7%
Forum/bbs	12,908	19.9%	12,046	19.5%	7.2%
Blog	10,896	16.8%	8,770	14.2%	24.2%
Internet finance	7,849	12.1%	–	–	–

2.Milestones in 2014

- On January 16, CNNIC issued the 33rd *Statistical Report on Internet Development in China*. By December 2013, the number of netizens in China had reached 618 million and the Internet penetration rate registered 45.8%.

- On January 15, CNNIC researcher Li Xiaodong was selected as a member of Multistakeholder Advisory Group (MAG) of the Internet Governance Forum (IGF).

- On January 25, the founding ceremony of the National Engineering Lab for Naming and Addressing and the conference on the inauguration of the council and the technology committee were held in Beijing. The establishment of the lab was led by CNNIC and approved by the National Development and Reform Commission.

- On February 20, the Internet Corporation for Assigned Names and Numbers (ICANN) officially announced CNNIC as Data Escrow Agent of new gTLD qualified to provide data escrow services for new gTLDs around the world.

- On February 11-13, a delegation led by ICANN President Fadi Chehade visited CNNIC.

- On March 7, the construction of China Internet Museum initiated by CNNIC kicked off.

- On March 11, CNNIC researcher Li Xiaodong was selected as one of the Young Global Leaders (YGL) of the World Economic Forum.

- On April 8, the Internet Society (ISOC) announced the latest inductees of the Internet Hall of Fame. CNNIC researcher Qian Hualin was on the list, becoming the second Chinese inductee following Hu Qiheng, former Vice President of the Chinese Academy of Sciences.

- On April 11, a delegation led by Lu Wei, Director of the Office of the Central Leading Group for Cyberspace Affairs and Director of the Cyberspace Administration of China, visited CNNIC.

- On April 23 and 24, CNNIC representatives attended "The future of Internet Governance – Global Multistakeholder Meeting (NETmundial)".

- On April 26, the cooperation program on Asia Pacific Internet fundamental resources applied by CNNIC jointly with economies such as Indonesia, Singapore, South Korea, Russia, and Vietnam was successfully selected as an APEC program.

- June 3 marked the 17th Anniversary of CNNIC's founding. Hu Qiheng, Honorary Chairperson of CNNIC Working Committee, Tan Tieniu, Deputy Secretary-General of the Chinese Academy of Sciences, Wu Heshuang, Chairman of the Internet Society of China, renowned physicist Chen Jiaer, many other academicians of the Chinese Academy of Sciences and the Chinese Academy of Engineering, as well as many pioneers and witnesses of China's Internet era extended congratulations to CNNIC and participated in a simple but cordial celebration with CNNIC staff.

- On June 10-13, CNNIC representatives attended the "World Summit on the Information Society (WSIS) + 10" High-Level Event held in Geneva, Switzerland.

- On June 11, DNSLAB, launched by CNNIC, became a formal member of Zhongguancun Open Labs.

- On July 11, ICANN announced that CNNIC researcher Li Xiaodong was selected into the IANA Stewardship Transition Coordination Group (ICG), the only Chinese representative.

- On July 17, CNNIC held a ceremony in Beijing for launching the global road show of the Chinese-language TLD Promotion Program entitled "Internet and China in A New Era". Since July, Chinese-language TLDs ".公司" and ".网络" have been open to the public for registration.

- On July 21, CNNIC issued in Beijing the 34th *Statistical Report on Internet Development in China.* Up to 83.4% of netizens surfed the Internet with mobile phones, higher than that of PCs, which was 80.9%.

- On August 26-28, CNNIC hosted the 11th Conference of the Asia Pacific Internet Research Alliance (APIRA) in Xi'an, China.

- On August 27, CNNIC and Farsight Security of the United States signed an agreement, announcing the establishment of CNNIC-Farsight Internet Data Joint Lab (CFID) dedicated to in-depth research on relevant technology, application and security in big data.

- On September 2-5, CNNIC representatives participated in the 9th meeting of UN Internet Governance Forum (IGF) in Istanbul, Turkey.

- On September 24, China Internet Security Conference (ISC 2014) was held in Beijing. As a guiding unit, CNNIC proposed the domain name security solutions – SDNS, at the conference.

- On September 28, Professor Werner Zorn from the University of Potsdam, known as "father of Germany's Internet", visited CNNIC.

- On September 29, CNNIC held a conference in Beijing to launch the "Trustable-website Certification Platform" ("NET • TRUST") and initiate cooperation on certification of defense-related websites.

- In October, CNNIC researcher Li Xiaodong was selected into the Internet Security Council of the World Economic Forum (Davos Forum).

- On October 30, the APEC workshop for the deployment of multi-language email address technology was held in Beijing. CNNIC launched the world's first Chinese domain email registration platform. Delegates at the workshop signed the appeal for the deployment of multi-language email address technology.

- On November 19-21, the 1st World Internet Conference took place in Wuzhen, Zhejiang. As one of the organizers, CNNIC carried out tasks in website assurance, topic design, guest inviting, and logistical support in an orderly way.

- On November 24, the 1st National Cyber Security Week jointly hosted by the Office of the Central Leading Group for Cyberspace Affairs and other ministries and commissions kicked off in Beijing. CNNIC participated in the public experience exhibition themed "Cyber Security around You", calling for the entire industry to highlight the security of Internet fundamental resources such as the domain name system and spreading the knowledge in this regard among the public.

- On December 8 and 9, CNNIC and Farsight Security jointly held the Workshop on DNS Future Root Service Architecture to discuss topics such as the technology, security and management of the domain name root service system.

- On December 26, CNNIC held an all-hands meeting where the Office of the Central Leading Group for Cyberspace Affairs announced the decisions on the appointment of major persons in charge and appointed Li Xiaodong as Director of CNNIC and Wei Zhengxin as Party Secretary.

3.Abbreviations

APNIC	Asia Pacific Network Information Center (APNIC), based in Brisbane, Australia, is one of the five Regional Internet Registries (RIR) in the world, responsible for the allocation of IP (v4 and v6) addresses and AS numbers to a total of 64 economies in the Asia-Pacific Region. It is a non-profit membership organization providing reverse DNS authorization services. Its members include ISPs, national (or regional) NIRs and other Internet organizations. It also provides technical training for IP address assignment organizations in the Asia-pacific Region.
APTLD	Asia Pacific Top Level Domain Association (APTLD), established in July 1998, is mainly composed of top-level domain name registries in the countries and regions of the Asia-Pacific Region. Its missions are to coordinate top-level domain name registries in the Asia-Pacific Region to enhance the influence of this Region in international Internet industry, seek more interests for the Internet development in the Region, and promote the healthy development of Internet in the Region.
CDNC	Chinese Domain Name Consortium (CDNC), founded in Beijing jointly by CNNIC, TWNIC, HKNIC and MONIC on May 19, 2000, is responsible for coordinating and regulating the Chinese domain names.
CENTR	The Council of European National Top Level Domain Registries (CENTR), founded in March 1998, is a non-profit group mainly composed of ccTLD registries in European countries.
CIETAC	China Internet Economic and Trade Arbitration Commission (CIETAC) is an institution that resolves disputes concerning .CN domain names.
CCSA	China Communications Standards Association (CCSA), established in Beijing on December 18, 2002, is a non-profit organization voluntarily founded by domestic enterprises and public institutions, approved by competent authorities, registered at the national social group registration and administration organ, and engaged in standardization in the communications technology sector.
CNGI	China's Next Generation Internet.
ccNSO	Country Code Names Supporting Organization.
EI	The Engineering Index.
HKIAC	The Hong Kong International Arbitration Center (HKIAC) is an organization that resolves disputes on Chinese domain names.

ICANN	The Internet Corporation for Assigned Names and Numbers (ICANN), founded in October 1998, is a non-profit legal person headquartered in Marina Del Rey, Los Angeles, encompassing experts in commercial, non-commercial, technological and academic communities of the Internet industry. It is now responsible for many significant fundamental network tasks worldwide, such as allocation of IP address space, configuration of protocol parameters and management of domain name system and root server system.
ITU	The International Telecommunication Union (ITU), established on May 17, 1865 and headquartered in Geneva, Switzerland, is an UN specialized agency for information and communication technologies. In addition to 191 member states, ITU membership includes over 700 private companies.
IETF	The Internet Engineering Task Force (IETF), established by the end of 1985, is mainly responsible for the development of Internet-related technical specifications. It is now the most authoritative technology research organization in the international Internet industry.
IGF	The Internet Governance Forum (IGF) is an open forum on Internet governance that the UN established in November 2006 according to the decisions of the World Summit on the Information Society. The secretariat of IGF is based in Geneva, Switzerland.
ISC	Internet Systems Consortium.
IDN	Internationalized Domain Name.
NSS	Naming Services Symposium.
NIR	National Internet Registry.
SCI	Science Citation Index.
SLA	Service Level Agreement.
WEF	The World Economic Forum (WEF), headquartered in Geneva, Switzerland, is a non-government international organization committed to studying and discussing issues in the world economy and promoting international economic cooperation and exchanges. The Forum was founded in 1971 by Klaus Schwab, professor at the University of Geneva and WEF's current Executive Chairman. With its original name as "European Management Forum", it was renamed the "World Economic Forum" in 1987.