

# Interview with the Inventor of the Future Network IPV9

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**Abstract**—With the rapid development of the Internet, from the PC terminal to the mobile terminal, from big data systems to intelligent hardware, technology has shown the unique charm of the Internet. With the development of the Internet, the network information security and network sovereignty issues involved have become increasingly prominent. Therefore, only in an environment of security, equality, and mutual assistance can the Internet play its due economic and social value. The emergence of a new generation of Internet IPV9 marks a key step for China to move towards an autonomous and controllable future network. IPV9 is to further safeguard national network sovereignty on the basis of fully guaranteeing network information security. But the defamation of IPV9 still exists. Recently, in order to further clarify the facts, we hereby interviewed Xie Jianping, the inventor of the Decimal Network, to conduct an in-depth discussion on the new generation Internet IPV9.

**Keywords**-IPV9; Future network; Decimal Network

## I. INTRODUCTION

The core of the current Internet (also known as the Internet) technology is IPv4 and IPv6, and its technical core is completely controlled by the United States. On December 14, 2017, the US Federal Communications Commission (FCC) officially abolished the net neutrality rule, making

the Internet with obvious political color and posing a serious threat to Internet applications in various countries. The address space of the IPv4 protocol is 2 to the power of 32. Due to the insufficient estimation of the development trend of the Internet in the early stage of Internet, the insufficient setting of the address space length caused the unreasonable IP allocation. By 2010, there were no addresses to allocate. In theory, IPv6 has  $2^{128}$  addresses, but only one eighth of the addresses can be assigned to end users, so there are only  $2^{125}$  addresses, which is equivalent to  $10^{37}$ . The 128 bar code in the Internet of Things is already  $10^{128}$ , which cannot be covered, so IPv6 also has certain limitations.

Since the establishment of the Decimal Network Standards Working Group of the Ministry of Industry and Information Technology in August 2001, Shanghai Decimal Network Information Technology Co., Ltd. has conducted more than 20 years of research in the future network field, developed a complete network framework system, and completed IPV9 with independent intellectual property rights. The patent obtained by IPV9 (2001, patent number CN98122785) has been recognized by many countries including China, the United States, the United Kingdom, Russia and other countries. This



and authoritative network experts in China is a lie. IPV9 is a protocol with an official version number and a specific technical background. The original technical documentation for IPV9, TUBA, was published by IETF two years before IETF1606 and IETF1607. IPV9 is a technology officially approved by the IETF and issued with a version number.

IPV9 is not a closed network, but is connected to the Internet in foreign countries. IPV9 can completely build a pure IPV9 network, and then connect to the old network through a gateway. The relationship between the future network and the Internet is like the relationship between the new highway and the old highway, which can operate independently or be interconnected. IPV9 information can be used in IPV9 network content circulation, digital domain name is owned by China's own root server, in foreign countries to cut off the network channel and stop the exchange of top-level domain (TLD), the use of digital domain users are not affected. In the event of foreign intervention or accident to cut off the overseas access to the Internet, China's network can still maintain a safe and stable operation. The IPV9 address of the future network is basically 256 bits long, and can be expanded to 1024 and 2048 bits. It can be expressed in simplified decimal or variable length to meet various application scenarios, while IPv6 address only 48, 64, 128 bits version and incompatible.

The future network IPV9 effective address length 256-2048 bits, can be independently and bidirectionally addressed, and can meet the needs of the Internet of Things and digital currencies. The address block architecture of IPv6 restricts its cross-city mobile and bidirectional addressing. It

must deduct the 32-bit network number of each international and operator. The effective URL is only 64 bits, which cannot meet the needs of the Internet of Things mobility and the number of URLs. Therefore, IPV9 is a milestone for China to maintain national network sovereignty, guarantee the security of network information, break the monopoly of the US Internet, and promote the rapid development of a new generation of Internet with independent control and secure interconnection.

### III. FUTURE NETWORK PATENT

China IPV9 has found a way to implement it, applying for patents and copyright protection. And there are many innovations in the concept of technology, and the development achievements have been remarkable. The main results are as follows: First, the program is complete. China's future network IPV9 has formed a complete technical solution, including many core technologies, such as naming and addressing technology, three-and-four-layer composite architecture technology, character direct routing technology, terminal analysis technology, compatible interoperability technology and new network security technology. Second, it is well equipped. China has developed the key equipment for the future commercial application of network IPV9, including root server, core router, parsing server and so on. Third, the standard is leading. In the domestic standard, the country has issued a number of technical standards based on decimal network and IPV9. Internationally, the core technology concept of IPV9 has been adopted into the international standard, and many technical solutions are about to apply to the international standard for approval. It is shown in figure 2.



Figure 2. Official document of the future network

Domestic standards for future Networks (ISO-29181/IPV9) include: Electronic industry standard of the People's Republic of China SJ/T-11603-2016, SJ/T-11604-2016, SJ/T-11605-2016, SJ/T-11606-2016, SB/T-10530-2009, SJ/T-11271-2002. It is shown in Figure 3.

Future Network IPV9 has obtained 8 patents in China (2 inventions, 6 utility models). The method by which the computer assigns the address of the computer by the whole decimal algorithm (patent no.: ZL001351826). A method for the uniform compilation and distribution of addresses of networked computers and intelligent terminals

(patent No.: ZL001168738). The method of assigning addresses to computers on the Internet by using full-digit code (patent No.: ZL981227856). Guidance code and its application system for goods and Commodity Code networking (patent No.: ZL200510027910X). A networked tax control system and its application method (patent No.: ZL2004100160308). Digital remote video monitoring system device (patent No.: ZL2004200207687).

The future network has also been awarded a US patent. It is shown in Figure 4.





<p>(12) <b>United States Patent</b> <b>Xie et al.</b></p>	<p>(10) <b>Patent No.:</b> <b>US 8,082,365 B1</b> (45) <b>Date of Patent:</b> <b>Dec. 20, 2011</b></p>																																
<p>(54) <b>METHOD OF USING WHOLE DIGITAL CODE TO ASSIGN ADDRESS FOR COMPUTER</b></p> <p>(76) Inventors: <b>Kenping Xie, Shanghai (CN); Menggen Wei, Shanghai (CN)</b></p> <p>(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.</p> <p>(21) Appl. No.: <b>09/763,246</b></p> <p>(22) PCT Filed: <b>Oct. 25, 1999</b></p> <p>(86) PCT No.: <b>PCT/CN99/00166</b> § 371 (c)(1). (2), (4) Date: <b>Feb. 20, 2001</b></p> <p>(87) PCT Pub. No.: <b>WO00/34884</b> PCT Pub. Date: <b>Jun. 15, 2000</b></p> <p>(30) <b>Foreign Application Priority Data</b> Dec. 4, 1998 (CN) ..... 98 1 22785</p> <p>(51) <b>Int. Cl.</b> <b>G06F 15/16</b> (2006.01)</p> <p>(52) <b>U.S. Cl.</b> ..... <b>709/245; 709/236</b></p> <p>(58) <b>Field of Classification Search</b> ..... 709/245 See application file for complete search history.</p>	<p>(56) <b>References Cited</b></p> <p>U.S. PATENT DOCUMENTS</p> <table border="0"> <tr><td>6,014,711 A *</td><td>1/2000</td><td>Brown</td><td>709/245</td></tr> <tr><td>6,061,738 A *</td><td>5/2000</td><td>Osaku et al.</td><td>709/245</td></tr> <tr><td>6,070,154 A *</td><td>5/2000</td><td>Tavor et al.</td><td>705/55</td></tr> <tr><td>6,178,455 B1 *</td><td>1/2001</td><td>Schutte et al.</td><td>709/228</td></tr> <tr><td>6,243,443 B1 *</td><td>6/2001</td><td>Low et al.</td><td>379/88.17</td></tr> <tr><td>6,594,254 B1 *</td><td>7/2003</td><td>Kelly</td><td>370/352</td></tr> <tr><td>2001/0027478 A1 *</td><td>10/2001</td><td>Meier et al.</td><td>709/206</td></tr> <tr><td>2002/0091754 A1 *</td><td>7/2002</td><td>Jang et al.</td><td>709/203</td></tr> </table> <p>* cited by examiner</p> <p><i>Primary Examiner</i>—Patrice Winder (74) <i>Attorney, Agent, or Firm</i>—Hamre, Schumann, Mueller &amp; Larson, P.C.</p> <p>(57) <b>ABSTRACT</b> This invention relates to a method for assigning addresses to online computers by using full digital code. The method constitutes using a full digital coding address ("FDCA"), which is the combination of an online number, telephone number and category number. An E-mail box address, which is composed of a user name digital number and a domain name digital number of the mailbox server where the mailbox is located, can also be assigned using the FDCA. The E-mail box can be accessed, or the Internet can be browsed, by inputting to the modem of the computer by dialing up a keyboard of a dial-up telephone or the keyboard of the computer; by linking the corresponding digital code; and by converting the digital code with dedicated software. The method is easy to remember and administer, and the assigned addresses are unique.</p> <p><b>13 Claims, No Drawings</b></p>	6,014,711 A *	1/2000	Brown	709/245	6,061,738 A *	5/2000	Osaku et al.	709/245	6,070,154 A *	5/2000	Tavor et al.	705/55	6,178,455 B1 *	1/2001	Schutte et al.	709/228	6,243,443 B1 *	6/2001	Low et al.	379/88.17	6,594,254 B1 *	7/2003	Kelly	370/352	2001/0027478 A1 *	10/2001	Meier et al.	709/206	2002/0091754 A1 *	7/2002	Jang et al.	709/203
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Figure 4. IPV9 US Patent Certificate

#### IV. TYPICAL APPLICATIONS OF IPV9

At present, my country has built demonstration projects of IPV9 address space, root domain name server and IPV9 backbone optical cable system in Beijing, Shanghai, Shandong, Jiangsu and Zhejiang, and is building a national military-civilian fusion IPV9 backbone optical cable and gateway bureau. The IPV9 network has now completed multi-point testing applications and has obtained good test data.

At present, China has established an "N" financial root domain name server which supports 256 bit address space. It has laid a foundation for the unified format of digital currency in China and

even the whole world. In the process of issuing digital currency, the root domain name server and the top-level domain name server in the United States can avoid the management control of the overall digital currency issuing network communication system in China.

China's digital currency network communication system must have a financial root domain name server parallel to the United States and a "chn" national top-level domain name server and its supporting digital currency electronic vouchers, payment processing and other security service facilities, and adopt advanced advanced authentication before communication Technology and supporting domestic encryption technology

completely solve the problem of financial information security, ensure China's financial stability, and safeguard national sovereignty. At the same time, the establishment of a third-party platform for digital currency and physical currency conversion, electronic bills and electronic business path and identity and qualification certification based on the decimal network root domain name server, and unified national prior identification and management.

The project of Healthy Tai 'an IPV9 big data platform relies on the existing backbone optical cable and user transmission and access network of Tai 'an Branch of Shandong Radio and Television Network Co., LTD., and USES IPV9 network technology for upgrading and reconstruction. The network covers medical and health institutions at city, county, township and village levels as well as Tai'an City financial bureau, medical insurance bureau and administrative departments of Tai'an. The bandwidth meets the requirements of big data business of Tai'an health and sustainable expansion, and the compatible and safe operation of IPV9 network and IPV4 network is realized.

## V. CONCLUSION

IPV9 is a new generation network architecture researched and developed by Chinese scholars. It is fully autonomous and controllable, with large address space and safe high-speed large code stream transmission. The distributed analysis of the network has low latency and is compatible with the current Internet system. Future Network is a method of empty cup design and new architecture to develop a Network system independent of the existing Internet to achieve a more secure, more economical, faster and more flexible Network. The future network will be developed in 15 years and put into preliminary commercial use around 2020.

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