

The Future Network is the System Innovation that Builds on the Future

Mou Chengjin

¹ China International Strategic Research Center of Mobile Communications Joint Association
Beijing, 100029, China

² Chief researcher of Zhejiang BeiDou Future Cyberspace Research Institute
E-mail: mcjzp139@139.com

I. UNSWERVINGLY BUILDING NETWORK POWERS IN THE NEXT FIFTEEN YEARS

The next 15 years, it is a new period of inspiration to unswervingly build a network power, digital China, and comprehensively strengthening the network security and security system and capabilities; it is a period of tenacious struggle to build and develop a network power with distinct sovereignty, independent control, security and efficiency, and to win a new victory in building a socialist modern country in an all-round way.

The CPC Central Committee's proposal for the formulation of the 14th Five-Year Plan for National Economic and Social Development and the 2015 Vision states that the whole Party should "carry forward the spirit of struggle, set up a bottom-line thinking, accurately recognize change, adapt scientifically, take the initiative to change, be good at raising opportunities in crisis, opening new change situations, seize opportunities, meet challenges, seek advantages and avoid disadvantages, and advance courageously."

Sovereignty, security and development interests are the whole bottom line thinking of building a socialist modern country in an all-round way, which cannot be decomposed or transferred.

Safeguarding and safeguarding national sovereignty is the basis of the principle of overall development and security; building a solid national security barrier is the fundamental guarantee of sovereignty and development; and achieving higher quality, more efficient, more equitable, more sustainable and safer development is the core will of sovereignty and security.

For a long time, China's public network has been confined to the Internet "American interests first" protocols and standards, restricted by the United States Internet "one Internet dominates the world" constraints and control, shackled in the U.S. military regulation of Cyber Space "the fifth battle area" thinking stereotype, ideological blind pursuit, technical constraints, management Handan toddler, in the field of network information key infrastructure and core technology few innovations, serious lack of international voice and rule-making power. Especially in the absence of scientific practice and argumentation, the blind deployment of the transition (experimental) plan of Internet IPv6 on a scale leads to the deepening, large-scale and diversified serious problems that endanger and threaten the sovereignty, security and development interests of China's important

industries, infrastructure, strategic resources, major science and technology and other key areas.

At present, the resistance, pressure and friction caused by the pro-Americanization and management lag of the existing network information system and mechanism in China are huge, and the tension, tension and centripetal force of independent scientific and technological innovation are obviously insufficient. The bottom-up chaos, confusion, confusion and confusion in the network information industry, and the top-down confusion, uncertainty, interweaving, interlacing, and mutual entanglement, it is difficult to form a powerful driving force and national stability of "coordinating traditional and non-traditional security, and running the development of security through all fields and the whole process of national development.

Some party and government cadres, network letter elite, industry talent, away from the Internet, left the IPv4, IPv6, do not know what to say, what to think, what to do. Emancipating the mind, expanding the vision, opening up the way, learning from the masses is the current management; knowledge level must set up the fashion, ability, and display level. Complicating simple problems, or tugging on the technical links between the US IPv6 and China's five G, is an old set of seemingly authoritative "consistently correct" numbers. We must adhere to the standard of practice to test the truth and carefully comb and clear the audit, and must not allow people and things who "sell their fields without heartache" to continue to mess up and mess up. The Party does not agree, and the people do not.

How to build the future network, what kind of future network, what are the standards, signs and norms to realize the future network power? We must make it clear, we must define and understand,

and we must form a highly unified understanding, will, public opinion and action of the whole party, the whole army, ideological and political.

The 14th Five-Year Plan is being refined, deepened and quantified. It is urgent for our country to resolutely adjust the plan and arrangement of the extraordinary scale transition (experiment) falling into the American trap, to encourage independence, self-improvement, and systematic innovation to carry on the past, and the whole country to advance bravely in the new journey of the network power.

II. THE FUTURE HAS COME, COMPARED WITH THE EXISTING PAST, THE FUTURE NETWORK IS A PLAN AND STANDARD INNOVATION

Since the 1980s, the Internet, which was extended and evolved by the American Apache network, has rapidly expanded the world and realized the original intention of "one net world" in the United States. From the beginning of this century, on the one hand, the United States has openly pushed the IPv6 transition (experimental) plan to the world (especially China) to push the Internet; on the other hand, it has organized the domestic dominant scientific and technological forces to secretly develop the "quantum Internet". In July 2020, the United States Government announced that a quantum Internet parallel to the existing Internet would be built within 10 years.

A clear understanding must be made that in the last century, the United States spent more than 20 years basically realizing the "one world" of the Internet, in which China's full access to the IPv4-based Internet in the 1990s accelerated this process. This century, the United States has spent nearly 20 years to realize the basic research and development based on IPv4 Internet under the cover of IPv6 transition (experiment), and has crossed the threshold of quantum Internet systematic innovation of parallel Internet.

China's original Ministry of Information Industry set up the "decimal Network Standards working Group" in September 2001 to explore network protocols and standards to adapt to and promote the modernization of socialism with Chinese characteristics. To explore the systematic innovation of independent and controllable public network based on IPv4 Internet. Despite enormous bottom-up, top-down efforts, the balance between policy implementation and coordination of resources was increasingly skewed to follow IPv6, missed nearly 20 years of innovation exploration and catch-up opportunities. Today, our country is still subject to the United States, behind the United States, more than half a century behind, more than one network era.

The successful experience of the United States should be used for reference. Seeking and maintaining a strong national defense (military) advantage has always been in the first sequence of the "American priority" policy. Military network has always been the core network of the United States Internet, "lighthouse network", "network in the network", in the Internet network of the top, "the top". The network information space composed of "bright net", "deep net" and "dark net", the network information service provided by the Internet, as well as its continuous strengthening and perfect technical support, is not only the outer barrier of the security protection of the American military network, but also the of open source information for the US military and the US government.

The Pentagon's recently released Department of Defense data Strategy 2020 defines the "data weaponization" consciousness and concept of "treating data as a weapon system and managing, protecting and using data to achieve operational and operational results. The U.S. Army Network Warfare Command has also integrated electronic

warfare and information warfare into "information advantage" (Information Advantage) and will gradually replace "information warfare" (Information Warfare) to support "decision advantage" (Decision Advantage). However, China's network information planning has long focused on the application of simple technology, ignoring the comprehensive, multi-angle, deep-seated center of gravity, gravity and emphasis of the integration of the military and the people, ignoring the main contradictions and contradictions in the field of network information, unreasonable structural planning and unsafe technical structure. In the event of an American cyber-attack and defense war against China, the result of serious asymmetry, imbalance and mismatch of attack and defense forces is obvious.

First of all, our country must draw up the independent and controllable network planning and the safe and efficient network standard, and draw the blueprint of our country's self-strengthening and striving network power. China's network planning and standards must be clear-minded in their own decisions, must take a clear-cut stand to ensure the sovereignty, security and development interests of the large circulation in the field of domestic network information, and must actively build and promote the development of a new pattern of domestic and international double circulation in the field of network information under the sufficient and necessary conditions of unswerving construction of network power. This principle of sovereignty, leading thinking, primary and secondary relations must not be reversed, misplaced, counter-control.

China's cyberspace can only be China's sovereign category. The network data and citizen privacy information originated from, originated from and formed in China must be guaranteed and maintained by China's national sovereignty. Any

country, any organization, any individual without our government's approval or violation of our data protection laws and regulations, must be punished by our government according to law, never in vain.

China's cyber-information space should have its country's borders (equivalent to cyber-customs), authentication agencies (equivalent to network immigration), international political, economic, trade and cultural exchange examination and approval agencies (equivalent to network foreign affairs ministry, commerce ministry, culture ministry, etc.), and power agencies (equivalent to network defense ministry of defense, national security, development interests) that defend the country's cyber-information space sovereignty, security, etc. China must step up planning, overall planning, careful planning and implementation of the plan, starting with planning and standards, and build a solid national security barrier.

China's national standards in the field of network communications can refer to the international standards adopted by the members of the ISO/IEC countries, the standards of Europe, Russia and other countries in the world, and cannot follow the standard of pure "American interests first interests first ". It is necessary to have the key infrastructure and core technical standards of China's independent and controllable decision, and must form its own standard system. Frankly speaking, it is necessary to give the United States and its supporting hostile forces the protocols and standards of network letters that potentially endanger China's sovereignty, security and development interests, set up a mirror, read a mantra, sacrifice gold hoops, design, distribute, maintain, route and resolve domain names, addresses, AS autonomous domain codes, and enforce compliance with China's regulations and standards, enforce compliance with China's

jurisdiction and governance, never slacken, and never succumb to threats, clampdowns, blockades and sanctions from any foreign or foreign organization or agency.

China's cyberspace must unswervingly and strictly implement the standards, norms and systems that safeguard and safeguard China's sovereignty, security and development interests. Any data and information must not only accept China's visa, inspection and examination and approval, but also be subject to China's legal and control according to law. Once found, severe punishment, random expulsion.

III. THE FUTURE HAS COME, AND THE FUTURE NETWORK IS THE INNOVATION OF KEY INFRASTRUCTURE AND CORE TECHNOLOGY RELATIVE TO THE PROGRESS OF THE TIMES

The economic, political, cultural, military and social information of the world and other countries, the United States relies on the Internet's coverage, control and surveillance capabilities and scientific and technological advantages, at a glance, in the bag, at its disposal and use. Especially for China, Russia, France, Britain and the long-term allies of the United Nations, Germany, Japan, Canada, Australia, New Zealand and so on, whether dignitaries, giants, soldiers, elites, are in the "prism" of the United States. In recent years, in order to protect the data and personal privacy of member

The Internet has become the bridge and context to communicate the destiny community of global cyberspace. All roads, routes, road signs, road signs (passes) are set up, managed and distributed in the United States, and all pass and road cards of "clear repair trestle, hidden warehouse" are set up and preferential exclusive service for "American interests first ". How easy is it to rebuild the network?

"One size fits all "," one move fresh "," one pot end" idea, people thought many, tried many years. Too many practices prove unrealistic, unfeasible and unreliable. The key is to violate the laws of science.

Some people lose the spirit of "two bombs and one star" patriotic struggle and the soul conscience of scientists, opportunistic, eager to achieve immediate benefits, deceiving the upper and lower, taboo medical care, worthy of fame. In order to solve the so-called "insufficient address" problem, the country and people have spent trillions of huge capital funds since this century alone, and the manpower and material resources and time costs that are difficult to count. At present, we are still forced to go back to the origin of "pure IPv6" to find a way out, to find a way out, to find a way out. The core U.S. military network still depends IPv4, more than 80% of users IPv4. The world In the face of irreparable cruel lessons and the truth, how can we be calm and insensitive?

The future network is the evolution promotion on the basis of reality, is to draw the foundation for the obvious disadvantages of the existing network, is to inherit critically and critically, is to correct mistakes, change the old, create new, is to turn passivity into initiative, make the old look new, is to create conditions for the realization of the network power, lay the foundation, clear the obstacles, and smooth the road.

Domain name, address and AS autonomous domain code design, planning, allocation (lease), maintenance, analysis (routing command, scheduling and analysis identification system formed according to established protocols, standards and specifications) constitute the "foundation" of all hardware, software and data of the Internet, constitute the physical framework identification system of Internet space, and constitute all sovereign attributes such as the

dominant power and control right of the Internet. More than 96% of the data in China only need to flow in China, but they are forced (mandatory) to accept the guidance of overseas routing to Japan, Taiwan, Singapore and so on. The huge cost of information flow dominated by international routing was eventually passed on to hundreds of millions of Internet users in China.

Can we design, compile and control the domain name, address and AS autonomous domain of our public network? Autonomous control of data information routing, autonomous resolution of domain names address? In theory, there is no can, only possible, since possible, do not try how to know cannot? Americans can, why can't the Chinese? There is nothing difficult in the world, as long as you are willing to climb.

The digital domain name technology of decimal network, as well as the identification network technology, all things wide code technology, graphic code information technology and so on, all show the intelligence of the Chinese nation. Whether it is fair, fair and open to support, for our independent innovation to provide the necessary environment, conditions, scenes and policies for large-scale network experiments and verification, is a clear-cut embodiment of the will of national sovereignty, no one or any unit should have any excuse and criticism of prevarication.

Do not try, dare not try, or no conditions to try, or fear that the United States long arm jurisdiction hegemony not to try? Or scruples about other interests deliberately avoid trying? The future has come, carry on the past, let not try, try not to try, when can try? Urgent need to be clear, urgent need to plan, urgent need to support.

Complex problems should be simplified. In the next 15 years, we should unswervingly build a network power and a digital China, and win a new

victory in building a socialist modern country in an all-round way.

Holding a cow's nose, what cattle do not follow me, do not listen to my words?

IV. THE FUTURE HAS COME, COMPARED WITH THE FUTURE WORLD, THE FUTURE NETWORK HAS ALWAYS BEEN IN THE STATE OF CONTINUOUS INNOVATION REVOLUTION

The future network is the foundation and process of the network power, but also the movement stage of continuous innovation. The future network is always dynamic, developing and progressive. Half a century, a century is subject to certain agreements and standards cannot accurately identify changes, scientific adaptation, active change of the network information space, can only be rigid, lag, do not adapt to the future environmental ecology and the needs of the development of the past tense, old style.

The world's most authoritative standardization organization ISO/IEC officially released TR 29181“Future Network Issues Statement and Requirements”, 2014:

1.1 Future Network (FN) [ISO/IEC TR 29181-1]

The FN is the network of the future which is made on clean-slate approach well as incremental design approach. It should provide futuristic capabilities and services beyond the limitations of the current network including the Internet.

Future networks redesigned with clear whiteboards and incremental design methods should provide capabilities and services beyond current network constraints, including the Internet.

From this perspective, the future network will not be restricted by all current and previous electronic computer networks, control networks, embedded networks, etc., and by wired networks,

wireless networks, optical communication networks, microwave communication networks, space networks, etc., in the sense of electromagnetic spectrum. It will not be entangled by the physical Internet, telecommunications networks, power networks, industrial control networks, software-defined networks, etc., and will cover the public, private and proprietary cyberspace in all fields of electronics, electromagnetic spectrum, quantum, cosmic gravity, human channels and biological information that mankind already knows, As well as the future development of the new cyberspace domain, constitute a diversified, multi-level, multi-angle coverage of wired, wireless, space, laser, quantum communications and other network domains for the future information society information processing and exchange system.

The future network will eventually have broad and deep space resources, support the interconnection, mutual trust, mutual operation of all network domains, realize the safe space environment of information sharing and exchange of human existence, life and production activities by people, objects and environment, and provide the ability and service of corresponding, interdependent and mutually promoting with the real physical world, and orderly management, security interaction, credibility and control, mutual communication, holographic mapping.

The future network will be an integral part of the cyberspace between the known and unknown universe. And it will not only completely abandon the structural, periodic and epochal defects of today's Internet IPv4, IPv6 technology, create a subversive theoretical and conceptual innovation, and finally complete the evolution and evolution process from computer network to information network, knowledge network and social integrated intelligent network provide the most reasonable,

convenient and advanced information processing ability and service for human information society to adapt to all historical stages.

However, this is not an overnight, wishful thinking, the need for human generation after generation of concerted efforts, continuous innovation and development. Because of this, the future network is a system innovation to carry on the past.

In the next fifteen years, we will start a new journey to build a socialist modern country in an all-round way, march towards the goal of the second century, and unswervingly build a

manufacturing power, a quality power, a network power, a digital China, and a patriotic, national and revolutionary soldier in the field of network information in China.

The future has come, the network power, the husband has the responsibility.

Motherland, here we come!

(2020.11.16)