# Remarks for Special Issue on SDN and Its Impact on Advanced ICT Systems

It has been about 20 years since the emergence of widespread Internet usage. Today's networks connect countries, society, corporations and life in real time, and support a broad diversity of communications and systems.

However, in step with the evolution of the Cloud, Big Data and other new technologies, Information Technology (IT) is increasingly demanded to deliver not only quick response to the evolving social environment but also efficiencies that enable optimized utilization of required resources only when it is needed.

On the other hand, conventional networks consist of distributed and autonomously controlled switching devices, routers and other communication devices governed by a static configuration based on network topology. These static and inflexible networks cannot respond to the need for dynamic control and overall optimization of the systems. This is posing a growing obstacle to the construction of the new ICT systems demanded by the increasing complexity of the social environment.

As one solution to this issue, SDN (Software-Defined Networking) is the focus of high expectations.

SDN decouples the network control function (the control plane), which is provided as an integrated part of conventional communication devices, from the data forwarding processing function (the data plane), and provides an open interface for communication between these planes. This approach is premised on a system architecture that enables shifting network

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control from statically set up hardware-integrated software to dynamically programmable software. SDN will facilitate greater freedom of network design by enabling anyone to produce software for operation on a general-purpose IT appliance, i.e., the computer server.

SDN transforms the remote relationship between IT and networks. By bringing all networking under logically centralized control, SDN not only significantly changes the system configuration, but also holds the potential to revolutionize the IT and network market structure.

Perceiving the game-changing market potential of SDN, NEC took the initiative and became the first in the world to launch a product base on OpenFlow - one of the SDN standard protocols - in March 2011. Currently over 100 companies in Japan and abroad have already deployed evaluation systems and full-scale commercial systems, and have verified the benefits of SDN.

Also by combining SDN advanced technology and its future prospects with cumulative technological know-how and achievements in IT and networking, NEC is fusing IT and networks and providing customers with flexible and simple ICT solutions. We believe that this approach lets us not only swiftly respond to our customer demands with solutions that realize their business vision, but also assist them in the creation of new business.

In this special issue, we will give the reader an overview of SDN's potential and NEC's approach to tackling this technology, followed by a description of the trends in SDN standardization such as OpenFlow and NFV (Network Function Virtualization)*. Then we will introduce NEC SDN Solutions that employ SDN technology and our product lineup, and provide a peek at our latest R&D which is extending the frontiers of SDN. Finally will present some case studies that showcase how advanced SDN technology can be best applied.

With the aim of "providing infrastructures for an abundant society for all people through ICT," NEC Group is focusing on Solutions for Society. SDN is positioned as one of the core ICT assets that will realize this mission. Through our research and development of SDN technologies and the further provision of ICT solutions that exploit the advantages of SDN, NEC takes another step "toward an information society friendly to humans and the earth" by developing the global social infrastructure, supporting the new growth of our customers, and enhancing safety, security, efficiency and equality for all.

It would give us the greatest pleasure if you find the information presented in this special issue useful in the pursuit of your business activities. On behalf of NEC, I would like to thank you for your trust in our products and services, and hope that you will continue to provide us with your invaluable support and encouragement in the future.

* NFV (Network Functions Virtualization) is the subject of one of the Industry Specification Groups of ETSI (European Telecommunications Standards Institute).

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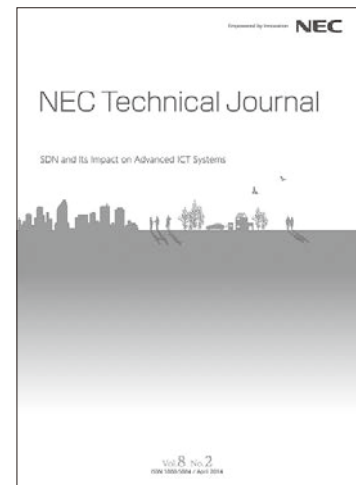
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**NEC Technical Journal**

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**April, 2014**

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