NEC develops network technology supporting server virtualization using OpenFlow

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NEC announced today the development of technology that improves the OpenFlow communication efficiency of virtualized servers that accommodate virtual machines (VM) by more than 10 times when compared to existing technology.

OpenFlow defines "flow" as a unit of communication in a network. By controlling communication in flow granularity, OpenFlow enables fine-grained routing and quality control. OpenFlow is a new generation networking technology that enables control of IT and networking by separating network control processes from switches to control servers and flexibly implementing them in software.

This newly developed technology is provided as software that directs flow to the most appropriate virtual machines on a virtual server by using Solarflare SFN5122F Dual-Port SFP+ 10 Gigabit Ethernet (10GbE) server adapters that support communications in flow granularity. This technology improves communication efficiency by more than 10 times by improving throughput by more than 3 times (at least 10 Gbps), and by improving CPU utilization by approximately one third when compared with current communication methods using 10GbE server adapters that do not support communications in flow granularity.

Until now, all communications were forwarded by software on servers, which made acceleration difficult. This new technology accelerates communications by using "cut-through," a technique for switching VM communication paths from the software forwarding path to a direct

access path between VMs and NICs, and eliminating the software forwarding process when possible. Greater acceleration and improved efficiency were both achieved by combining this technology with Solarflare's flow compatible NIC.

As the deployment of cloud computing continues to expand, the improvement of data center efficiency and performance has become a greater challenge. In this environment, cloud services of the future will require fine grained network control and management functionalities in order to provide high quality and secure services.

To meet these requirements, technologies such as server virtualization that provides multiple virtual server environments on a single real server, and virtual switching that connects virtual servers to networks, are used. However, these technologies brought about issues with the performance and efficiency of communications.

To resolve these issues, NEC promoted both the acceleration and improved efficiency of servers that use OpenFlow in order to support the larger scale and advanced cloud infrastructure of the future. Additionally, this technology contributes to improving the efficiency of networks that support cloud services.

NEC will continue to actively promote the development of virtualization and acceleration technologies for networking, and the products that use them.

Provided by NEC