

## NEC's New I/O Virtualisation Technology Enables Simultaneous Sharing of I/O Devices among Multiple Computers

**Tokyo, June 22, 2010** - NEC Corporation (NEC; TSE: 6701) announced today the development of a new I/O virtualisation technology that enables simultaneous sharing of I/O devices among multiple computers.

This technology is a major extension of the ExpEther [\(\\*1\)](#) that virtualizes PCI Express switches over standard Ethernet.

The technology provides scale-up capability to data centre servers by flexibly reconfiguring I/O devices along with service requirements. Furthermore, the flexibility of using virtual devices only when necessary, as compared to installing multiple devices on each individual server, reduces capital expenditure by an estimated 50% and power consumption by approximately 30%.

Conventionally, PCI Express required such components as Root Complex, PCIe switches, endpoint devices and PCIM (PCI Manager) in order to comply with MR-IOV standards [\(\\*2\)](#) and to share I/O devices between multiple computers.

This newly developed technology uses I/O devices that comply with the SR-IOV standard [\(\\*3\)](#) which provides sharing an I/O device from a multiple Virtual Machine (VM) on a single computer. Compared to MR-IOV, SR-IOV is easy to implement and then, some vendors already released SR-IOV compliant I/O devices today. ExpEther's connection with this single SR-IOV compliant device enables it to share I/O devices through multiple computers using Ethernet. As a result, the new technology provides users with a solution that is similar to MR-IOV, but earlier and cheaper adaptation.

NEC verified the performance of this technology on real computer platforms using Exar Corporation's SR-IOV compliant 10G-Ethernet card, the X-3100, and connections to ExpEther. [\(\\*4\)](#)

NEC is currently driving the research and development of computing platforms and next generation ICT platforms. Moreover, NEC is seeking to provide new computing possibilities and user benefits through the growth and standardisation of these technologies.

NEC has demonstrated a prototype of the storage gateway box featuring ExpEther at Interop 2010, held from June 9 - 11 in Makuhari Messe, Chiba. NEC also plans to release new products that have adopted this technology in 2011.

This work was partly supported by Ministry of Internal Affairs and Communications (MIC).

### [\(\\*1\) ExpEther](#)

ExpEther is a virtualisation technology for servers and network equipment that was first launched in 2006. The system integrates two major standard computer and network interfaces, the PCI Express ("PCIe") and Ethernet. Further information is available at <http://www.expether.org/>

### [\(\\*2\) MR-IOV](#)

MR IOV is the specification for I/O virtualisation that enables I/O to be shared among multiple computers. Further information is available at [http://www.pcisig.com/news\\_room/06\\_09\\_08/](http://www.pcisig.com/news_room/06_09_08/), <http://www.pcisig.com/specifications/iov/multi-root/>

### [\(\\*3\)](#)

SR-IOV is the specification for I/O virtualisation that enables I/O to be shared among multiple virtual machines in a single computer. Further information is available at [http://www.pcisig.com/specifications/iov/single\\_root/](http://www.pcisig.com/specifications/iov/single_root/)

### [\(\\*4\)](#)

No modifications were made to any components, including the OS and drivers.

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