(Press release material)

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Nippon Telegraph and Telephone Corporation
Hitachi, Ltd.

The concept of a storage-centric network which is "safe and secure anywhere" jointly developed

Nippon Telegraph and Telephone Corporation (hereafter referred to as "NTT"; headquartered in Chiyoda-ku, Tokyo, Japan; President and CEO: Norio Wada) and Hitachi, Ltd. (hereafter referred to as "Hitachi"; headquartered in Chiyoda-ku, Tokyo, Japan; President and CEO: Etsuhiko Shoyama) have jointly developed a prototype for a "storage-centric network", a network which provides a "safe and secure" PC usage environment "anywhere" within a corporation, by integrating NTT's high speed, high quality network technology with Hitachi's high performance, highly reliable storage technology.

The concept of storage-centric network is a new solution designed to:

- reduce the workload associated with the daily management of PCs within a corporation;
- ensure business continuity / disaster recovery (BC/DR) (*1) and;
- prevent leakage of corporate information in the event of the theft or loss of PCs.

The two companies plan to study the application of the storage-centric network to a variety of usage situations so that the network can serve as a basis for the next-generation iDC services.

The R&D divisions of the two companies have been undertaking joint R&D since April this year, and this work has resulted in the development of the storage-centric network described here.

1. Storage-centric network

(1) Background

As IT systems used by corporations become more and more sophisticated, there is a rising concern about unexpected business stoppages due to natural disasters, such as typhoons and earthquakes, fire, terrorist attacks targeting corporations, and network crimes. Corporations are placing increasing importance on business continuity / disaster recovery (BC/DR). However, to create this level of security, every PC user working in a corporation must spend significant amounts of time managing the health of his or her PC, such as backing up data, applying security patches to the OS, checking for viruses, and updating software. To solve this cumbersome PC management problem, we have developed a prototype of the "storage-centric network," which achieves a *safe and secure* storage environment *anywhere* by using a wide-area IP network to concentrate the files used by client PCs in large-capacity IP storage devices, instead of storing them in the hard disks of individual PCs (see Fig. 1).

(2) Main features of the storage-centric network
The main features of the storage-centric network are as follows:

(1) Since everything from the OS and applications to data is concentrated in the large-capacity IP storage devices, the operator can centrally manage all the PCs, thus dramatically reducing PC management costs.

(2) Since security patches can be applied to the OS and applications in the large-capacity IP storage devices, eliminating the need for applying them to individual client PCs, worms and viruses can be effectively prevented.

(3) Since no data is stored in the PC, there is no risk of confidential information being leaked in the event a PC is stolen or lost.

(4) Since the latest IP storage technology(*2), iSCSI(*3), is used for the connections between the large-capacity IP storage devices and client PCs, the storage-concentric network can be applied to a wide-area Ethernet or an IP-VPN(*4). In the event of a disaster, the enterprise IT system can be restored quickly because client PCs can be restarted using backed-up files stored at the remotely located large-capacity IP storage devices.

There are many challenging technical issues to be solved in developing a storage-centric network, such as a degraded response in accessing storage devices because these devices must be accessed through a LAN and a wide-area network rather than being confined within a PC. The joint R&D into the storage-centric network seeks to solve these problems by integrating NTT's terminal/user authentication technology(*5) and technology to prevent network traffic congestion(*6) with Hitachi's storage control technology, including technologies for high speed access to storage data and storage management (see Fig. 2).

(3) Future development plan
The storage-centric network is being developed based on the assumption that its main application will be for business users, such as corporations, governments, and educational institutions. However, we will continue development so that the network may at some stage be suitable for personal users as well.

2. History of the joint RcD

NTT has for some time been acutely aware of the phenomenon referred to as "the Valley of Death"(*7), where R&D results are not successfully converted into business applications, and has been working intensively to overcome the problem. One approach NTT has found to be important is not to try and develop everything on its own, but to combine its technological strengths with the strong suits of others in order to obtain better outcomes for both parties.

Hitachi recognizes that in the rapidly evolving IT market a company cannot survive unless it is capable of altering its business structure rapidly in response changes in the market. It wants to accelerate the creation of new businesses, such as those in the ubiquitous communication field, by collaborating with others.

Against this background, the R&D divisions of NTT and Hitachi started joint R&D in

April this year based on their shared view on the "need for early development of IT technology that will help solve the social problems of the 21st century, such as the Digital Divide, declining birthrate and aging of society, overconcentration of population and economic activities in particular areas, increasing crime and a deterioration in the natural environment."

The storage-centric network is one notable achievement arising out of this joint R&D endeavor.

<Glossary>

*1 BC/DR (Business Continuity / Disaster Recovery)
A set of processes and a system that allows advance planning and preparation and uninterrupted maintenance to ensure the continuity of business operations, and the recovery or restoration of business activities in the event of natural or human disasters or terrorist attacks.

*2 IP storage technology
Technology to enable access to storage devices over an IP network using iSCSI.

*3 iSCSI
Standard protocol to transfer commands of SCSI, a widely used storage access protocol, over an IP network.

*4 IP-VPN
Virtual Private Network built over a wide-area IP network.

*5 Terminal/user authentication technology
Technology to verify that the terminal or the user is legitimate by using passwords or authentication keys in order to prevent unauthorized use (for example, through spoofing).

*6 Technology to prevent network traffic congestion
Technology to prevent degradation in communication response between host computers due to network traffic congestion.

*7 The Valley of Death
This metaphor refers to the gap between R&D and full commercial introduction. The gap exists because of the difficulty in determining how R&D results can be converted into a viable business opportunity or product.

-<Fig. 1>Concept of storage-centric network
-<Fig. 2>Contributions of NTT and Hitachi to storage-centric network

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