

## §1. Reconstruction of the Network for Collaboration using Super-SINET

Tsuda, K., Nagayama, Y., Yamamoto, T., Ishiguro, S., Horiuchi, R., Hasegawa, H. (INTEC Solution Power Inc.)

The network for collaboration using Super-SINET was built on Super-SINET by MPLS-VPN since the 2001 fiscal year. A remote station for "superconductivity research", and eight remote stations for "LHD experiment remote participation" were installed by the 2004 fiscal year[1,2]. Those remote stations were; Univ. of Tokyo, Nagoya Univ., Kyoto Univ., Kyushu Univ., Tokyo Institute of Tech., Hiroshima Univ., Tohoku Univ., Kyoto Univ. and Univ. of Tokyo.

New subjects "remote use of supercomputer system" and "all Japan ST (Spherical Tokamak) research program" were added to the collaboration in the 2005 fiscal year. The "remote use of supercomputer system" is a project which uses the supercomputer system of NIFS efficiently from a remote station. The "all Japan ST research program" builds a virtual laboratory for ST research on Super-SINET and each laboratory communicates mutually and shares databases. To fill those needs, the network for collaboration using Super-SINET was reconstructed in the 2005 fiscal year.

The block diagram of the reconstructed network for collaboration using Super-SINET is shown in Fig. 1. The access place and the routing method from a remote station of each subjects are shown in Table 1. We adopted dynamic routing control for mutual communication between remote stations. RIP v2 was applied to all the routers linked to Super-SINET, and all the routers

were defined as the same MPLS-VPN closed region.

In NIFS side, we designed and constructed network as follows. For "LHD experiment remote participation" and "all Japan ST research program";

- 1) Five 1Gbps circuits were prepared from Super-SINET, and those were connected with three gateway routers.
- 2) Three gateway routers adopted RIP v2 as routing control.
- 3) The load balancing of five circuits from Super-SINET became possible by the function of RIP v2.
- 4) The routing control between three gateway routers and a router of LHD-LAN adopted OSPF protocol.
- 5) The load balancing between three gateway router and LHD-LAN become possible by ECMP function of OSPF.

For the "remote use of supercomputer system";

- 1) One 1Gbps circuit was prepared from Super-SINET, and it was connected to a gateway route which was connected to a gateway server for Supercomputer system.
- 2) The routing control adopted a static definition.

In the 2005 fiscal year, three remote stations were installed; Kyushu Univ. for the "remote use of supercomputer system" and the "all Japan ST research program", and Nagoya Univ. for the "LHD experiment remote participation".

The reconstructed network can perform mutual communication between remote stations, and can contribute to advance the collaboration for new subjects.

### References

- 1) Tsuda, K., Nagayama, Y., Yamamoto, T., Hasegawa, H.: Ann. Rep. NIFS (2003-2004) 400.
- 2) Tsuda, K., Nagayama, Y., Yamamoto, T., Hasegawa, H.: Ann. Rep. NIFS (2004-2005) 383.

Table 1. Access and Routing for Subject

Subject	Access to	Static Routing	Dynamic Routing
Remote use of Supercomputer system	Supercomputer System	○	—
all Japan ST research program	another remote station	△	○
LHD Experiment Remote Participation	LHD-LAN, another remote station	△	○

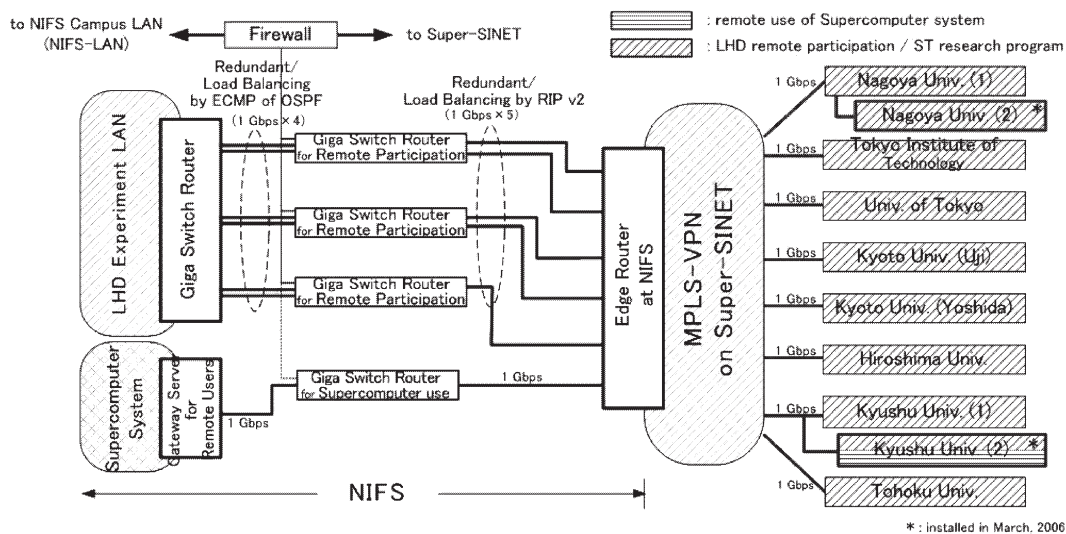


Fig. 1 The Block Diagram of Network for collaboration using Super-SINET