

14. Network Management Office

Network Management Office (NMO) has been established on April 2009 by the merging of the former Network working group in Department of Simulation Science and the LHD LAN management group.

The information network is fundamental for the research activity. The advanced NIFS campus information network named “NIFS-LAN” is the information infrastructure which contributes to the development of nuclear fusion research. NIFS has 300 staffs and the number of their PC is near 3,000. “Network Management Office” (NMO) provides 100Mbps / 1Gbps bandwidth to users. NIFS-LAN consists of three autonomous clusters which have their own purposes and

usages as follows;

1. *Research Information Cluster* is the network of general use, and covers the campus whole region.
2. *LHD Experiment Cluster* is provided for LHD experiment, and covers the building relevant to LHD experiment.
3. *Large-scale Computer Simulation Research Cluster* is provided in order to support the large-scale computer simulation research efficiently.

NIFS-LAN is connected to Science Information Network 3 (SINET3) managed by National Institute of Informatics. The block diagram of NIFS-LAN is shown in Fig. 1.

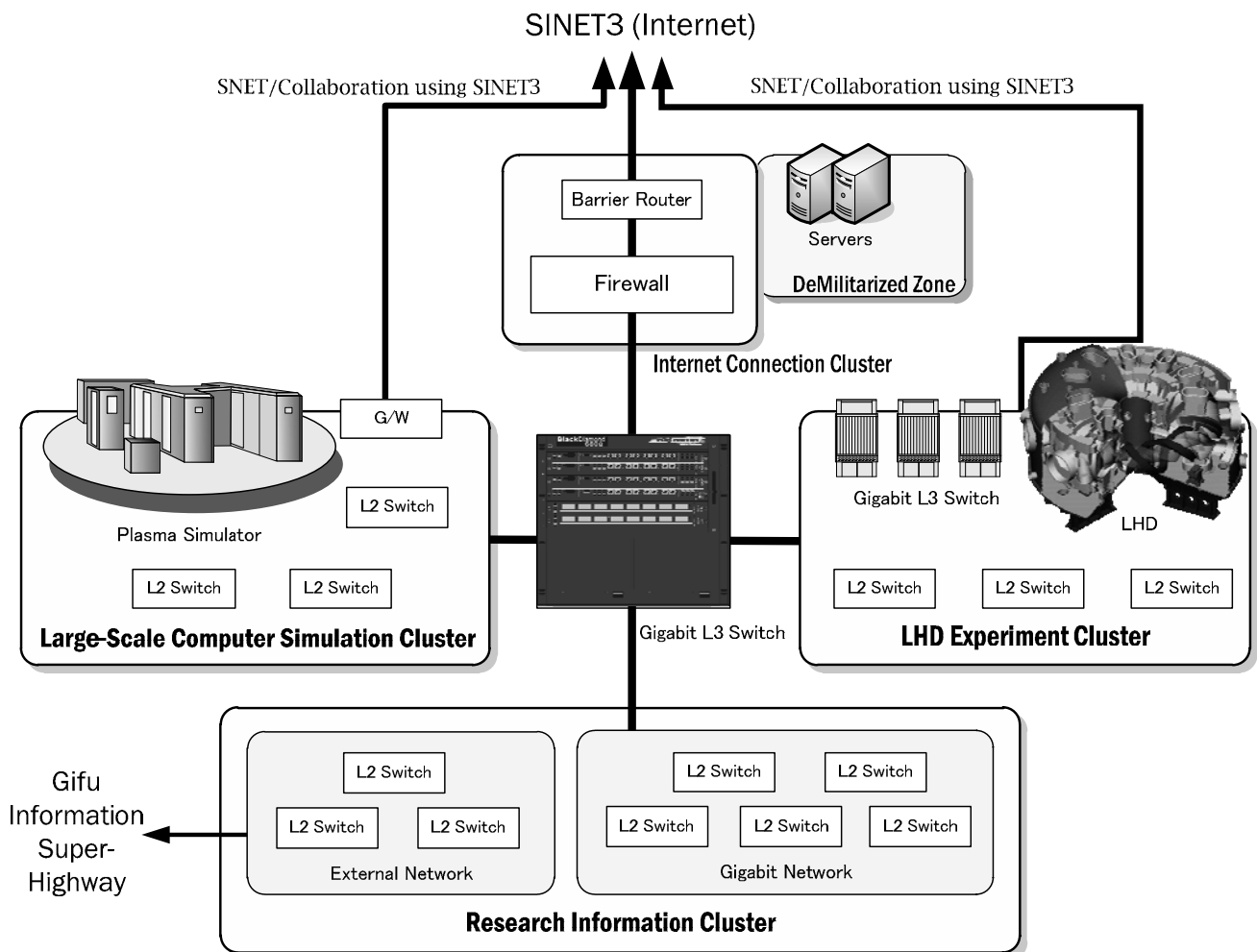


Fig.1. Block Diagram of NIFS Campus Information Network (NIFS-LAN)

NMO has performed following three activities in FY2010.

1) Operations and administrations of information network

a) The e-mail is a basic communication tool for the research activities. NGW has operated the mail server for NIFS to realize the effective communication. 52 new accounts (e-mail address) were created and 65 accounts were deleted in FY 2010. The mailing list service has also provided. 92 lists were created and 70 lists were deleted in FY 2010.

b) To manage the network, NMO has administrated the following information system;

- * Mail, SSL-VPN, DNS and DHCP servers
- * Routers and Layer 2 / Layer 3 switches.

For example, 145 hosts were added to DNS server and 130 hosts were deleted on Research information cluster in FY 2010. NMO also guides the staff of NIFS on information network and information systems.

2) Security improvements

To keep the high-level security, NIFS-LAN has introduced the firewall and other security equipments. In FY 2010, the following activities were performed to maintain the network security.

a) Owners of PCs who bring them from outside of NIFS are requested to make a security check before connecting them to NIFS network. The quarantine network room was offered for such a security check and supports of quarantine processing to be sanity. This room was used more than 171 times in FY 2010.

b) Secure Socket Layer-Virtual Private Network (SSL-VPN) is a kind of VPN, which uses web browser as a client's software. The SSL-VPN in the NIFS has also the function to check the security level of the client before VPN connection is established. User is needed to use the One-Time Password (OTP) token as the authentication. Eight accounts were newly created, 98 accounts were renewed, and no account was removed in FY 2010. The number of accounts for NIFS is 86 and the number of accounts for research collaborator is 29.

c) Eleven security incidents were treated by NMO in FY2010.

- Virus infection at PC through USB memory ... 5
- Detection of virus on old-used PC ... 3
- Detection of virus on co-researcher's PC ... 2
- Detection of virus in mail spool on user's PC ... 1
- Virus infection at PC by browsing malicious web site ... 1

Most virus infections could not be prevented by the vaccine software even with latest virus definition file, because the

number of malformation virus, such as spyware and adware, is very large and the time to change is very short. More attention is needed to prevent to virus infection.

3) Notable activities in FY 2010

a) Renewal of the mailing list server and NMO web server

The mailing list server, which delivers the e-mail to listed addresses, was renewal with a new workstation server. The processing capacity was also improved. The task to update was done in a weekend to avoid the interruption of the research and business activities. Web server of NMO was also updated to offer more attractive information to users; <http://www-net.nifs.ac.jp/>.

b) Lecture for information network

Seven lecture classes on the subject of the campus network of NIFS, information security and how to register the MAC address were delivered in FY2010 and 201 staffs joined. This lecture was held under "Information Security Policy" with the Information Security Committee. Only the attendance of this lecture can be the MAC address registrar (162 members) who can register MAC address of PC to DHCP system in NIFS.

c) 14th Security workshop for inter-university research institutes

Security workshop for inter-university research institutes (SWS) hosted by NMO had been held at NIFS and more than 20 member were joined from 15 organizations, Okazaki, NAOJ, Sokendai, KEK, Riken, ILE and so on. Case studies and latest topics related to information network and its operation were discussed with enthusiasm on the two-day workshop.

d) Support for upgrading from SINET3 to SINET4

Science Information Network (SINET) is the national-wide academic information network managed by National Institute of Informatics (NII). NIFS was directly connected to SINET3 node with one gigabit line for the campus lifeline, and seven gigabit lines for the remote collaboration program called SNET. On March 2011, NII upgraded the backbone network called SINET4 and offered one gigabit line for the lifeline and one ten-gigabit line for SNET. New layer-2 switch which has 10G port had been prepared to connect SINET4 and the existing SNET facility.

e) Others

- Shutdown of *dss* name domain
- Provide the network infrastructure to ITC-20
- Re-wiring of the network cable on the library building.

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