

# 12. Division of Information and Communication Systems

The Department of Information and Communication System (ICS) was founded in 2014 in order to develop and maintain the information and network systems of NIFS efficiently. All of the information system experts in NIFS belong to the ICS. There are five TASK groups which correspond to the job classifications in NIFS. The Network Operation task group manages and maintains the communication systems in NIFS, such as the E-mail system including security issues. The Experimental Data System task group performs operation and development of data acquisition systems for the LHD experiment. The Institutional Information Systems task group carries out the maintenance and development of the management systems for collaboration research and its output. The Atomic and Molecule Database task group maintains the atom and molecule database which is open to researchers around the world. The Integrated ID Management and Authentication System task group manages integrated ID and authentication systems.

The ICS works as follows: the request for the maintenance, improvement, and development of the information and communication system from each section is submitted to the ICS. The deputy division directors of ICS check all the requests, establish the priority among them, and assign them to the appropriate Task Group. Because all the experts belong to the Technical Service Section of ICS, each Task Group Leader asks the Section Leader to allot the required number of experts for a prescribed period of time so as to finish the job.

In NIFS, three research projects extend across the research divisions. It can be said that the ICS is another “project” which lies across all the divisions in the institute for keeping the information and communication systems stable, secure, and up-to-date.

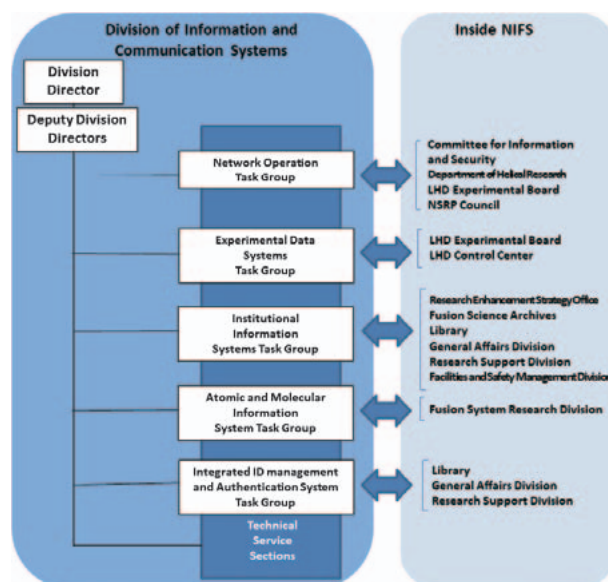


Fig. 1 Structure of Division for Information and Communication Systems.

## Information Network Task Group

The information network is a foundation for research activity. The Information Network Task Group operates the advanced NIFS campus information network named “NIFS-LAN,” which contributes to the development of fusion research, with strong security systems.

Notable activities in FY 2019 by the Information Network Task Group:

- The firewall system of Internet Connection Cluster has been upgraded. A throughput to the internet

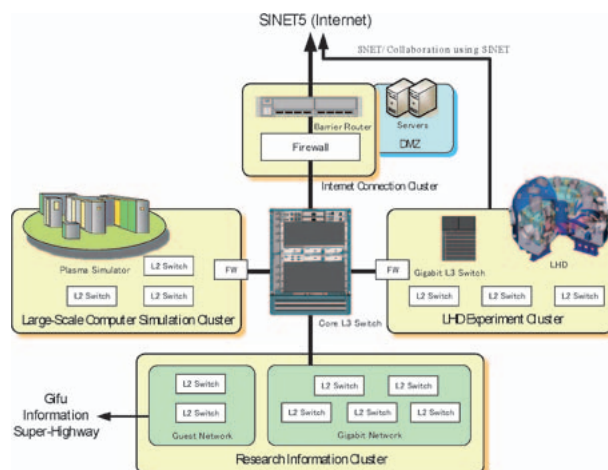


Fig. 2 Block diagram of the NIFS campus information network, which consists of three autonomous clusters that have their own purposes and usages.

has been improved by 10 GbE interfaces of the new firewall system. The interface boards of core L3 switch have also been upgraded.

- The firewall appliance of the LHD Experiment Cluster has been upgraded. Before the LHD experiment campaign, the security condition of each PC was checked in order to keep the safety network free of malware.
- Security incidents were treated with a malware detection appliance and the firewall. Lectures were held regarding the information network and its security. An informational system audit held by NINS was also accomplished.

## Integrated ID Management and Authentication System Task Group

Many information technology (IT) systems require a user authentication and an authorization mechanism in order to keep their confidentiality. Because a traditional IT system has its own independent authentication mechanism, users of these systems are forced to manage many credentials such as a password for each IT system, and administrators of these systems are responsible for their ID management. Such a circumstance leads to a security risk and is a waste of human resources both for users and IT system administrators. Switching from one's own authentication mechanism to a shared authentication system is a possible solution for this issue.

The integrated ID management and authentication system task group (IDMAS-TG) investigates various technologies and protocols related to authentication and ID management to develop an integrated ID management and authentication system, which provides a shared user authentication service to IT systems in NIFS.

The IDMAS-TG has been developed and deployed for some services such as the following:

### *GakuNin*

The GakuNin is the academic access management federation consisting of universities and academic institutes in Japan. NIFS joined the GakuNin in FY 2017. The current status of the GakuNin service in NIFS is still experimental.

### *Eduroam*

The eduroam is a world-wide Wi-Fi roaming infrastructure. NIFS joined the eduroam in FY 2018. The Wi-Fi access points providing internet connection service for guests were gradually replaced to eduroam-ready devices in FY 2018-19. Further, the eduroam service covers each room in the accommodation facility (Helicon Club) in FY 2019.

### *Colid*

An ID management system for collaborators of NIFS research collaboration program (Colid), which is based on SAML (security assertion markup language) under shibboleth IdP and LDAP (light-weight directory access protocol) similar to GakuNin, is utilized for information disclosure to collaborators via web sites.

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