

§2. Data Transfer from GAMMA 10 to LHD Virtual Laboratory via SNET

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We started to exhibit the total collection data in GAMMA10 on Plasma Research Center, University of Tsukuba with the collaboration of LABCOM group since 2008. In GAMMA 10, base data acquisition is performed by using a CAMAC system by using Windows PC. These data is collected on the Soralis10 data server system with 4TB RAID system. In addition, we have many stand alone PC data collection systems for many diagnostics. We constructed the Linux (CentOS) data collection server system with 24TB RAID, in order to collect total collection data in GAMMA 10, such as CAMAC collection data and many other diagnostic data. We have connected the NIFS LABCOM/X system under the new framework of “Fusion Virtual Laboratory” where users can access the data equivalently regardless of their whereabouts. Such the activity is named “SNET”, which is based on a closed VPN on Japanese academic internet backbone SINET3 and covers multiple experimental remote devices. In Fig. 1, we show the SNET formation between GAMMA 10 local network and NIFS server segment. We send the

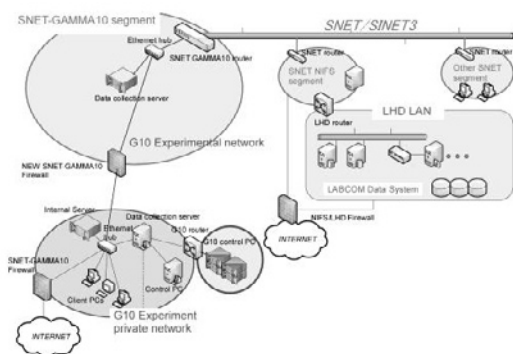


Fig. 1. SNET formation between GAMMA 10 local network and NIFS server segment.

GAMMA 10 total collection data from the GAMMA 10 data collection server to the NIFS LABCOM/X system, and succeeded. Now, we have started the GAMMA 10 data to transfer to the NIFS LABCOM/X system, in order to show the total GAMMA 10 collection data. Table 1

shows the GAMMA 10 collection data names and file sizes. Total file size of transfer data is about 377 MB/shot and 2412 MB/year. CAMAC show the CAMAC collection data. Spectroscopy group collected the UV/V spectrograph data as sp-ct100c and sp-ct100a and UV/V multi-channel spectrometer data as sp-usb1 and sp-usb2, respectively. Gold neutral beam probe (GNBP) group collected the GNBP data as bpcc. Neutral beam injection (NBI) group collected the high speed camera data as nb-hs-camera, the middle speed camera data as nb-ms-camera1, nb-ms-camera2, and nb-ms-camera3 data. Electron cyclotron resonance heating (ECRH) group collected the soft X-ray data as mcpcc. The ion cyclotron resonance frequency (ICRF) group collected the electrostatic probe, magnetic probe, probe, and

Diagnostics	data name	Size(kB)
Spectroscopy	sp-ct100c	5800
	sp-ct100a	3100
	sp-usb1	160
	sp-usb2	160
GNBP	bpcc	3300
NBI	nb-hs-camera	285000
	nb-ms-camera1	13000
	nb-ms-camera2	3600
	nb-ms-camera3	3600
ECRH	mcpcc	448
ICRF	rf-eprobe	960
	rf-mprobe	39000
	rf-probe	13000
	rf-machprobe	3900
PRC	CAMAC	2668
	TOTAL	377696

Table 1. GAMMA 10 data transfer files.

mach probe data as rf-eprobe, rf-mprobe, rf-probe, and rf-machprobe, respectively. Many data transforming scripts have been developed to register them into NIFS data repository to be shared on SNET, and finally the whole data of 2008 campaign have been successfully migrated to be sharable on SNET.

In addition to share the already acquired data, a new remote DAQ node has been installed at GAMMA10 to measure four channels of floating voltages of the plasma end plate. The essential information of experiment operation, the sequence timings and the shot number, are given by the GAMMA10 experiment control system through the hard wires and the http network communication, respectively.