

Prospects for Developing the FLNP JINR Local Computing Network

Y.A. Astakhov, V.I. Prikhodko, G.A. Sukhomlinov

*Joint Institute for Nuclear Research,
Frank Laboratory of Neutron Physics,
141980 Dubna, Moscow Region, Russia*

Abstract

The local computing network (LCN) of the Frank Laboratory of Neutron Physics started to be created more than 10 years ago as a part of the Institute Ethernet LCN. Since it is arranged as a single broadcasting domain, it has certain disadvantages: broadcasting traffic of layer 2 is processed by each network node, the occurrence of broadcasting storms at layer 2 affects the work of the whole domain, localization and elimination of malfunctions are difficult, one maladjusted workstation can hinder or even paralyze the work of the whole segment. In practice, the efficiency of this network is inversely proportional to the number of nodes connected to the network.

At present, the number of nodes in the FLNP network approaches 500 and tends to increase further. A simple increase in the number of subsystems is impossible. More than 70% of hosts operates at the rate of 100 Mbit/s. In the FLNP cluster consisting of 20 workstations and servers of the SunSparc, Ultra SunSparc and Enterprise 3000 types, a group of servers is allocated to perform corporate functions (WWW, E-mail, database) and places rather heavy demands on transmission capacity of connecting channels. An urgent necessity arose to control the transmission capacity of the channels, to filter the network protocols (some old operating systems cannot interact with modern protocols and this results in failures in their work) and to provide the network protection of data.

All the above suggests the necessity of the LCN modernization, the main direction of which should be the construction of campus Laboratory network using commutations of layer 3 and higher, routers, higher-speed communication lines and appropriate protocols. The devices by the CISCO firm are considered as base equipment for the FLNP LCN due to their compatibility with the existing units.