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Renovation of HEPnet-J for near-future experiments

Formerly most of HEP experiments in Japan used the centralized computing model.

Originally HEPnet-J had only one instance which is connected to Internet, and recently it has many closed network which connects domestic sites.

At that time, the network connectivity in Japan was very poor and the main purpose of HEPnet-J was providing enough connectivity for interactive use over domestic and international links funded by KEK. During last 10 years, the domestic and international connectivity provided by each university and NREN has been dramatically improved and it is enough for manual transfer of typical mDST files.

The rapid growth of data volume makes it unable to apply same model to new generation experiments. As the LCG tier structure for LHC has proved that the distributed computing model over collaboration sites is really applicable to the huge scale experiment, the external connectivity for international collaboration sites should be more faster, and more secure.

For example, the Belle II experiment in KEK will have huge data repositories in US and EU. The expected throughput from KEK to US is 20Gbps, thus we have to bypass the security device like a firewall for this data path. The computing facility in KEK (KEKCC) is not enclosed in the firewall of KEK, but it has a dedicated firewall that is managed by the independent policy. Its throughput is sufficient to handle an ordinary activity over Grid VO. But it is not enough for the mass-data transmission for Belle II, we have to bypass it in the same way of LHCONE. Now bypass lines for Belle II are prepared and under testing.

We will report how we renovate HEPnet-J for experiments driven by international collaboration.

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