

HEPS virtual cloud desktop system based on Openstack, design and implementation (Remote presentation)

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High Energy Photon Source (HEPS) will generate massive experimental data for diversified scientific analysis. The traditional way of data download and analysis by users using local computing environment cannot meet the growing demand for experiments. This paper proposes a virtual cloud desktop system of HEPS based on Openstack, which is used for imaging and crystal scattering experiments in HEPS. Such experiments are characterized by high requirements on image display effect and need high-performance GPU calculation and image rendering, but the experimental site does not have such conditions. In this paper, HEPS virtual cloud desktop system based on Openstack is proposed for imaging and crystal scattering experiments in HEPS, which are characterized by high requirements for image display effect and require high-performance GPU computing and image rendering, but the experimental site does not have this condition. Therefore, how to use the resources of the computing cluster to provide virtual cloud desktops is particularly important. Firstly, we introduce the related research work of this system, including the optimization of Openstack virtual machine, the performance test of light source experiment on virtual machine. Then we introduce the architecture of virtual cloud desktop in detail, PCI pass through and virtual GPU, import of experimental data, storage and export of experimental results, data and network security policies. Finally, we give the actual application of virtual cloud desktop system in the light source experiment, and show the superiority of virtual cloud desktop technology and good application prospects in the field of synchrotron radiation light source.

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