Experience of IPv6 and Cloud Deployment at NCP

National Centre for Physics (NCP) in Pakistan, maintains a large computing infrastructure for scientific community, including a Teir-2 site of Worldwide LHC Computing Grid (WLCG). Need for IP address space has been increased, due to expansion of infrastructure, and adoption of Cloud technology for hosting virtual machines. On the other side, IPv4 address space is almost near to depletion, and hence migration to IPv6 is inevitable. NCP is among the few organizations in the country, which is actively involved in promoting IPv6 and has deployed next generation IPv6 protocol in its campus network. NCP network is configured to provide IPv6 support by ensuring high availability of services, security, and optimized routing. Most of the corporate services are running in dual stack mode. WLCG site is also being tested and evaluated on IPv6. This paper discusses the detail about experience with IPv6 and current status of computing services over IPv6. With the complete deployment of IPv6 for WLCG services, storage pool nodes and computing nodes will need not to use NAT to communicate with the global WLCG nodes at different sites. Foreman and Puppet is being used for automated installation configuration of computing nodes at NCP. Physical resources are being monitored through Zabbix. OpenStack based cloud has also been deployed for efficient utilization of computing resources for different projects. Till now, we have tested the WLCG computing nodes deployment over private cloud using OpenStack. This paper also presents the plan, for availability of GRID resources through private cloud which will enable on demand creation of compute nodes.

Primary authors: Mr KHAN, Muhammad Tanzeel Murtaza (National Centre for Physics); Mr HALEEM, Saqib (National Centre for Physics, Islamabad, Pakistan)

Co-author: Mr SAEED, Fawad (National Centre of Physics)

Presenter: Mr SAEED, Fawad (National Centre of Physics)

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