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An overview of the DII-HEP OpenStack based CMS Data Analysis

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An OpenStack based private cloud with the Gluster File System has been built and used with both CMS analysis and Monte Carlo simulation jobs in the Datacenter Indirection Infrastructure for Secure High Energy Physics (DII-HEP) project. On the cloud we run the ARC middleware that allows running CMS applications without changes on the job submission side. Our test results indicate that the adopted approach provides a scalable and resilient solution for managing resources without compromising on performance and high availability.

To manage the virtual machines (VM) dynamically in an elastic fashion, we are testing the EMI authorization service (Argus) and the Execution Environment Service (Argus-EES). An OpenStack plugin has been developed for Argus-EES.

The Host Identity Protocol (HIP) has been designed for mobile networks and it provides a secure method for IP multihoming. HIP separates the end-point identifier and locator role for IP address which increases the network availability for the applications. Our solution leverages HIP for traffic management.

This presentation gives an update on the status of the work and our lessons learned in creating an OpenStack based cloud for HEP.

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