## dCache **Development and Testing on Openstack.**

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dCache is a system for storing and retrieving huge amounts of data, distributed among a large number of heterogeneous server nodes, under a single virtual filesystem tree with a variety of standard access methods. dCache is a joined effort between Deutsches Elektronen-Synchrotron (DESY), Fermi National Accelerator Laboratory and Nordic E-Infrastructure Collaboration.

## Integration of the dCache Development and Testing Setup into the DESY IT-Infrastructure

Although dCache is under collaborative These are manages using a combination of Using a single template describing the development the building, testing and Foreman and Puppet for centralised dCache cluster or the client suite the host release infrastructure is located at DESY. installation and configuration. are spawned, receive their DNS entries and are registered with Foreman. As for any At the moment it is a rather independent Currently the dCache developers and the machine in the DESY computing centre a part of the DESY computing centre. The role is assign in Foreman and Puppet dCache infrastructure consists of several DESY computing centre are investigating a manages the installation and configuration. closer relationship between their high performance servers. Unfortunately







these resources remain unused outside the usual release cycles.

Independent of the dCache developers DESY operates several dCache installations providing about 20 Peta-Bytes of disk space for ATLAS, CMS, ILC, Belle II and the photon science experiments run at the European XFEL and PETRA III. Is is also used for the local storage cloud.

independent infrastructures.

As a first step the functionality test are migrated to the DESY Openstack compute cloud. Rather than on a bare metal machine a test cluster can be spawned using different orchestration methods. Right now, several virtual machines are created with the help of the HEAT module of Opensack.

After the setup is complete the tests are run on the machines in Openstack and the results are reported back to Jenkins for inspection of the developers.

After all tests are completed the spawned machines are deleted and thus the resources are again available for other users.



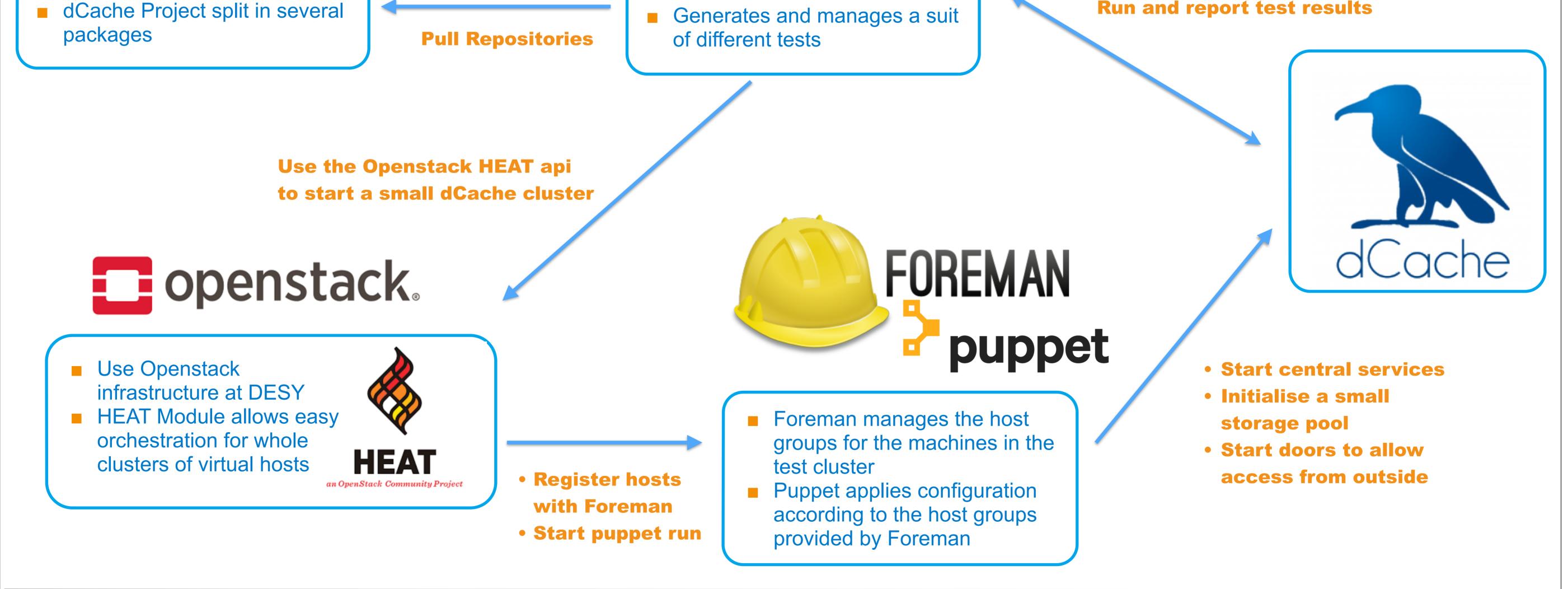
- dCache repository hosted on GitHub



- Pulls code from GitHub
- Builds dCache



**Run and report test results** 



## **Advantages**

## **Disadvantages**

- Resources are only allocated when actually needed
- The dCache test installation reflect closely the productive environment of sites deploying dCache
- Cloud infrastructure provides great flexibility in testing a wide variety of clients and server setups
- Reliance on infrastructure provided by DESY such as storing and deployment of GRID certificates
- Additional complexity based on cloud infrastructure
- Latency issues due to spawning and configuration with **Openstack and Puppet**
- Changes to dCache infrastructure at DESY affects dCache development and testing

