Cluster Management using TrinityX and Ansible

<u>Markus Wagner</u>

init.at informationstechnologie GmbH

At init.at informationstechnologie we are providing our - mostly industrial - customers with comprehensive services in high performance computing, including consulting, benchmarking, performance optimization and software development. Even though these projects are rather customized in nature, there is a common task in pretty much all of them: To deploy a useful, efficient and easy-to-use cluster management software which allows our customers to perform defined activities on the cluster and that enables our experts to efficiently support the users and administrators from remote.

For this purpose, we are using TrinityX [1], an open source cluster manager, as a foundation for the HPC systems we are installing. TrinityX is based on a multitude of well-known open source software, including OpenLDAP, SLURM, NTP and NFS and also has some basic support for OpenStack, Docker and HA setups. Other key components are Luna for image provisioning and Zabbix for monitoring. We have further extended TrinityX to also support the PBS Professional workload manager from Altair [2].

For setup and provisioning, TrinityX uses Ansible [3], an automation system for configuration, deployment, provisioning and task-execution on remote systems. Using the minimal YAML syntax, the configuration files are human-readable and changes can be easily stored and tracked in a version control system like Git. This allows for a very efficient tracing of differences and changes, e.g. between clusters on different sites or for configuration changes over time. Furthermore, the combination of Ansible and Git forms a convenient basis to develop customer-specific administration tasks, e.g. to deploy configuration files on a set of compute nodes.

In this talk, I will discuss the used technologies in a typical cluster setup with TrinityX and show the capablities and advantages of an Ansible-based deployment system.

References

[1] https://github.com/clustervision/trinityX

[2] https://www.pbspro.org

[3] https://github.com/ansible/ansible