

Implementation of an email-based alert system for large-scale system resources

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Table of Contents

1. Motivation
2. Aim
3. Development Stages
4. Conclusions

Motivation

Within a research department:

Scientific community

- Tackle different problems
- Construct a codebase for a particular issue
- Develop a scenario for executing simulations
- Request access to computing resources (submit jobs)

System administration community

- Manage allocation of the computing resources for each job
- Monitor executing simulations
- Monitor idling resources
- Keep track of incoming jobs

Simulations

Scientific community

- *Unoptimized* simulations lead to:
 - Long execution time (will cause delays in the pipeline)
 - Low degree of parallelism (cannot take full advantage of multiple core/threads)
 - Excessive memory consumption (limited resource)
- Simulation testing + optimization is required

Resource management + monitoring

Sysadmin community

- Allocate jobs (e.g., simulations) to the computing cluster
- Manage computing nodes (updates, services)
- Observe *unexpected* behavior of the running simulations
- Check *idling* resources for potential issues



- Keeping track of all these aspects 24/7 is very challenging

Project Goals

- Create a service which:

1. Monitor multiple computing nodes/clusters (system resources, executing services, etc.)
2. Identify potential issues within the resources
3. Inform the sysadmin in realtime on the occurring issue(s)

Alert system

Alert system

General workflow