Container-level Elastic Scaling System for Computational Workflows on Networked Cloud

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**Motivation**
- Manage virtual resources on the fly.
- Balance the performance and cost.

**Approach**
- Use APIs of networked cloud to provision/release resources as needed: monitor workflow execution and enforce policy for dynamic resource planning.
- Maintain transparency for workflow users: keep standard Pegasus+Condor workflow stack.
- Leverage Pegasus integration with ExoGENI by RENCI and USC/ISI teams.

**Using Containers**
- Instantiate VMs from generic reusable template.
- Customize VMs for workflow with docker containers.
- Docker contains application code and data.
- Provision a high-speed virtual network per workflow.
- Distribute dockers over private network.

Workflow execution in elastic cloud system

Control flow of elastic cloud system