

OpenStack Magnum: An Introduction

Overview

Preliminaries: Build Magnum Enabled Cloud

- New sample mkloud configuration:
- <https://raw.githubusercontent.com/jdsn/cloudtraining/blob/master/cloud.x.magnum>
- Please deploy a fresh cloud with this configuration now.

Preliminaries: Slides and Transcript

- Compiled slides (recommended)
 - *Internal URL omitted*
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- [odpdown](#) sources only (not merged, yet)
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- Commands and configuration files for hands-on are in the `cmd/` directory

What is Magnum?

- Overview

- Fairly new OpenStack service (started in Kilo)
- In SUSE OpenStack Cloud since version 7
- Provides CaaS (Containers as a Service) with orchestration
- Supported Container orchestration engines: Kubernetes, Docker Swarm, Ubuntu Mesos

- Underlying Technologies

- Various Linux images supported (CoreOS, Fedora Atomic, OpenSUSE)
- [Heat](#) for providing the VMs/networks making up the cluster
- [Flannel](#) overlay network: allows communication between containers on different hosts
- [cloud-init](#) for setting up container infrastructure on cluster VMs

How does it work?

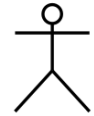
- User's point of view
 - Describe cluster infrastructure (e.g. orchestration engine, Glance image) in terms of *Cluster Templates*.
 - Create a Magnum *Cluster* in an OpenStack project based on this Cluster Template.
 - Access cluster's native API (Docker, Kubernetes) and deploy containerized workload on it.
- Magnum's point of view
 - Generate the appropriate Heat template for the orchestration engine/Linux image combination specified by the user.
 - Parametrize and instantiate the Heat stack and wait for it to deploy.
 - Report success to the user.

Terminology: Bays and Clusters

- Mitaka and earlier:
 - *Bay*: old term for Magnum's *Cluster* resource.
 - *BayModel*: old term for Magnum's *Cluster Template* resource.
- Cloud 7 (Newton):
 - *Cluster* current term. Bay commands can still be used in the client.
 - *ClusterTemplate* current term. Bay Model commands can still be used in the client.

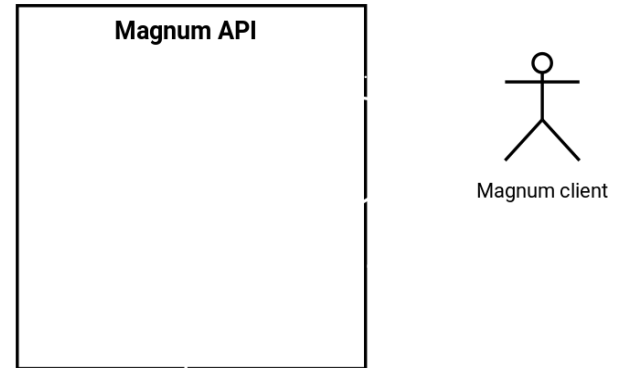
Magnum Under The Hood

User...

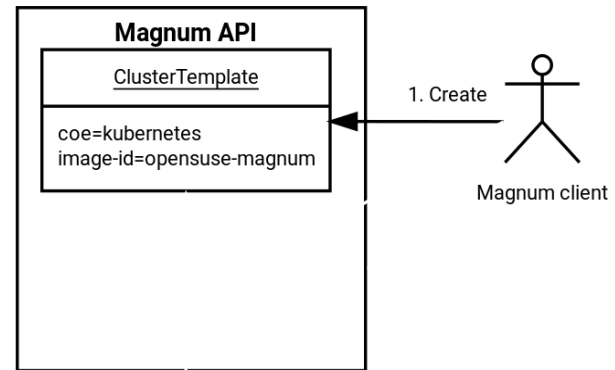


Magnum client

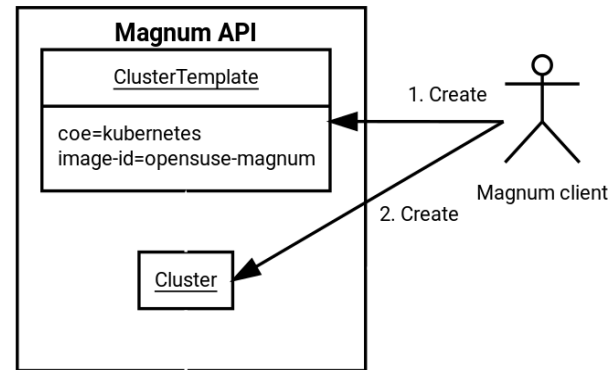
User and Magnum API



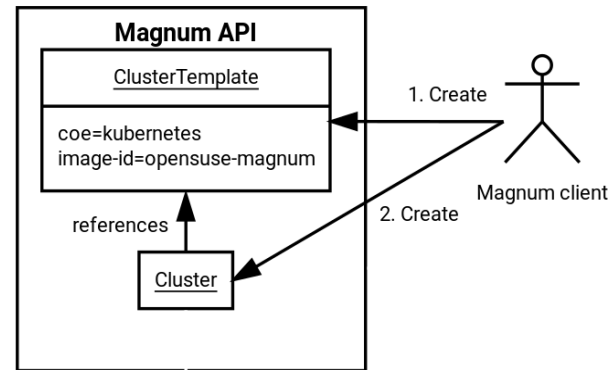
Describe Cluster in ClusterTemplate



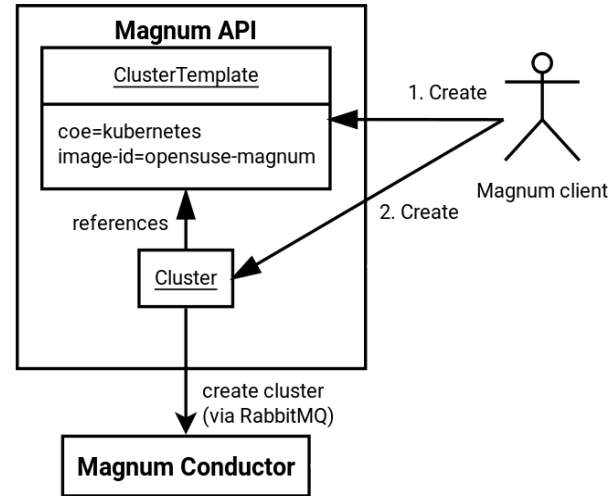
Create Cluster...



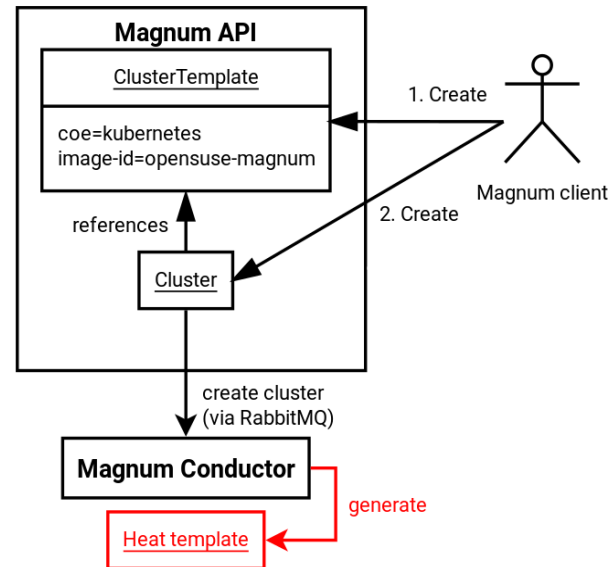
...based on ClusterTemplate



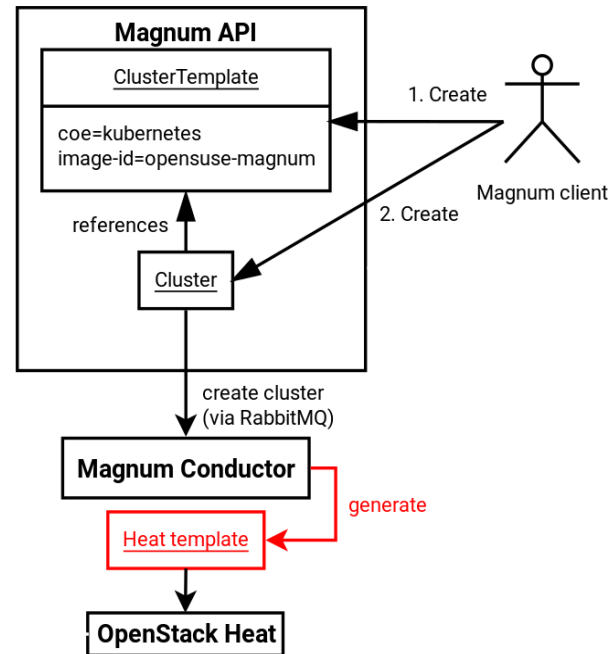
API to Conductor: "Create Cluster, please"



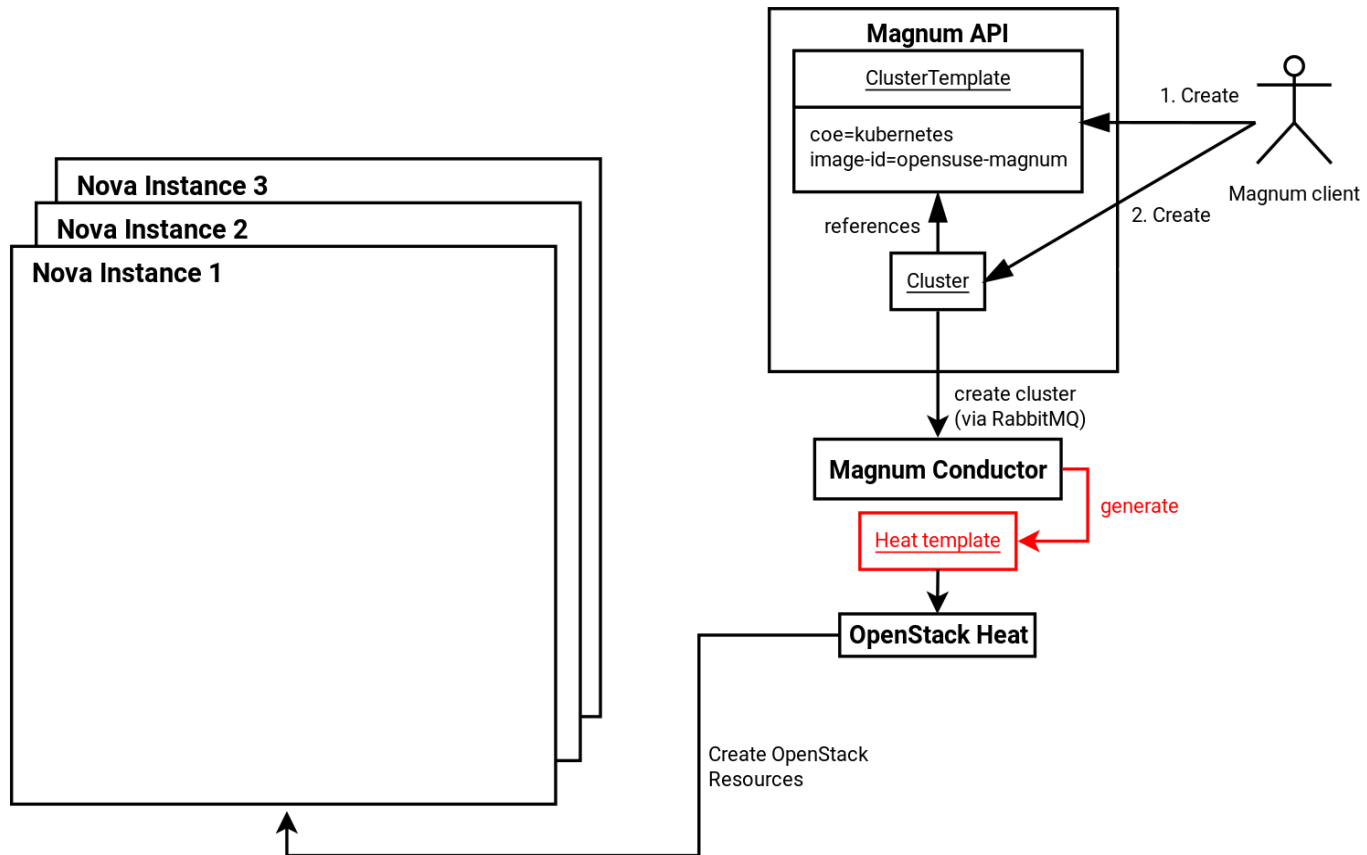
Generate a Heat Template Matching Cluster



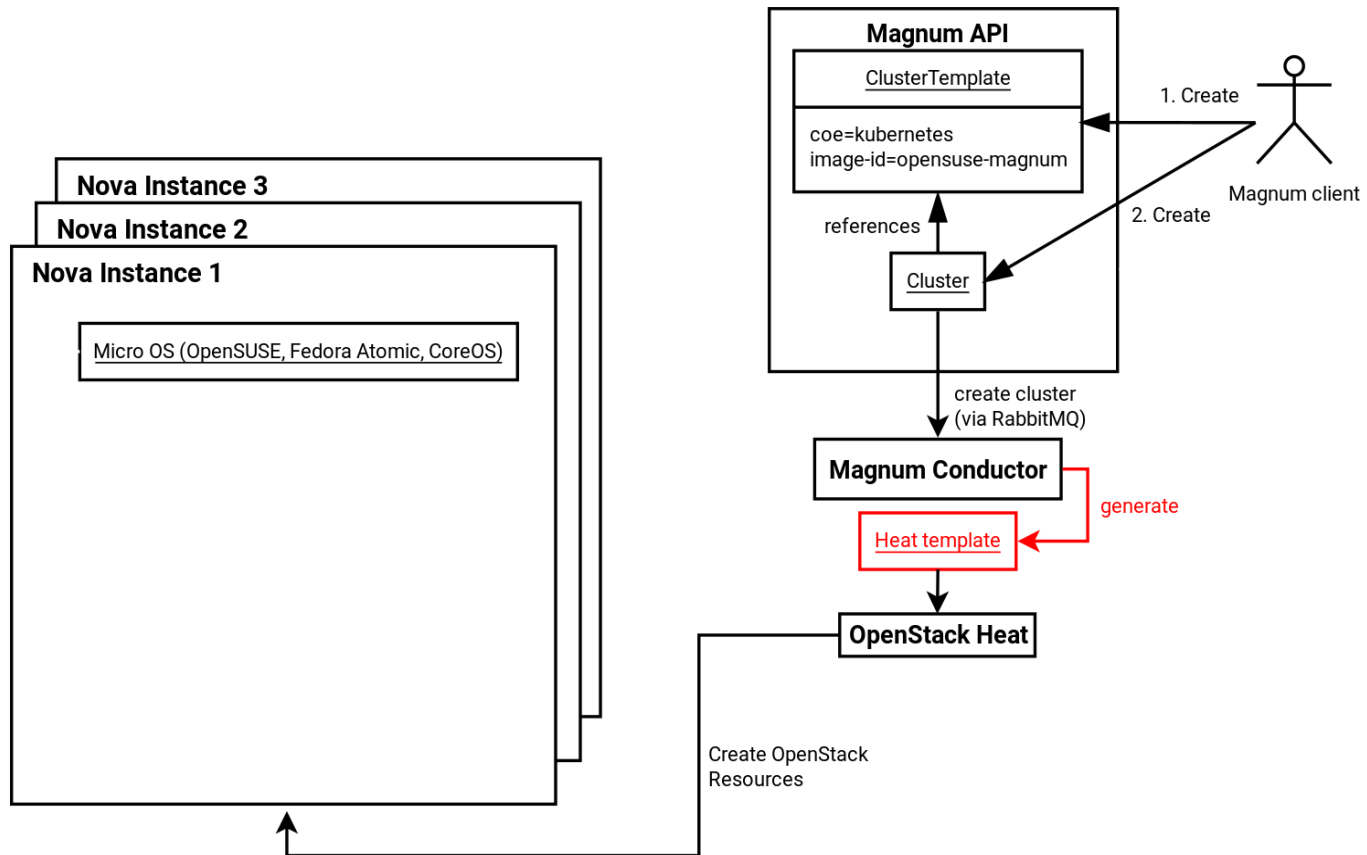
Send Heat Template to Heat API



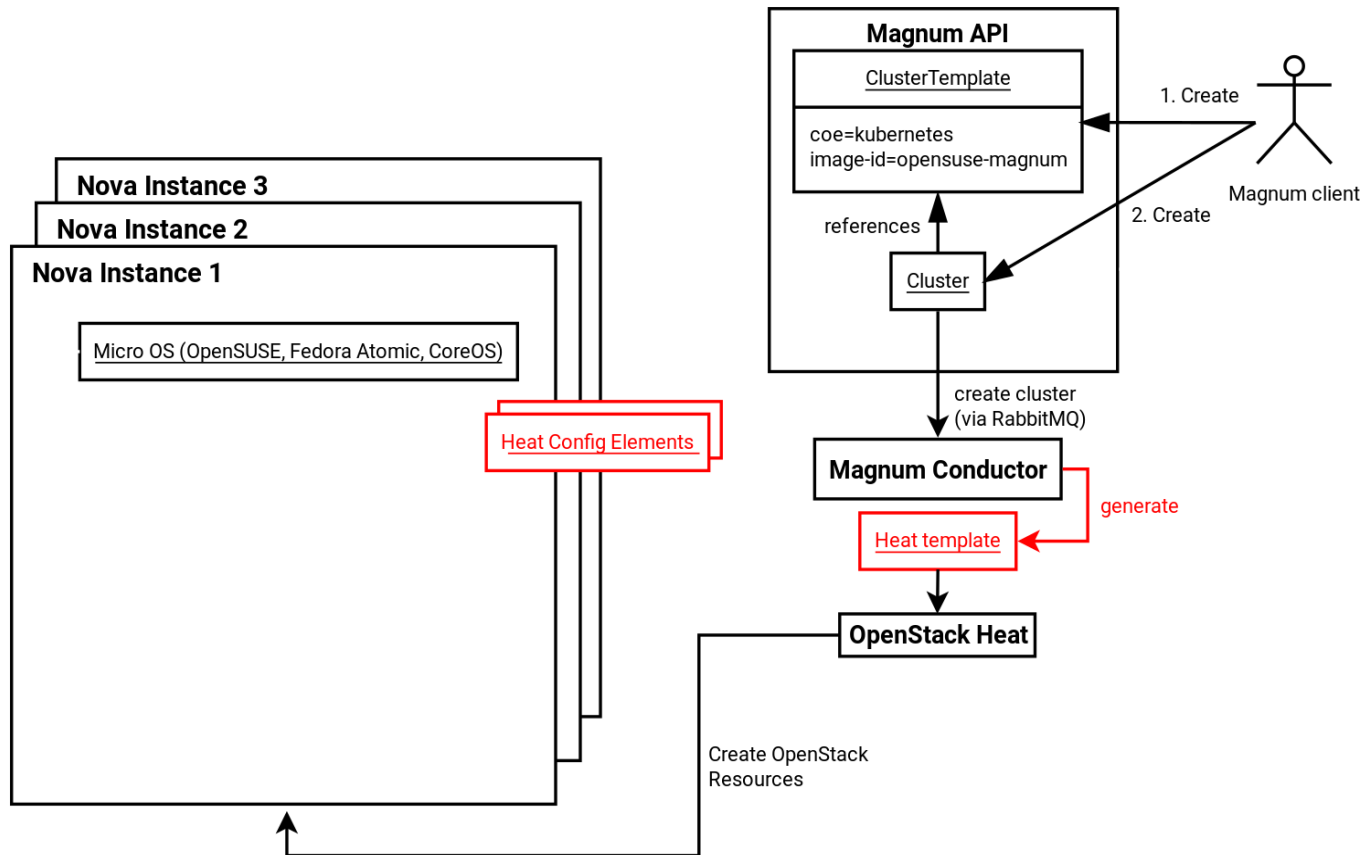
Heat Creates VMs and Plumbing



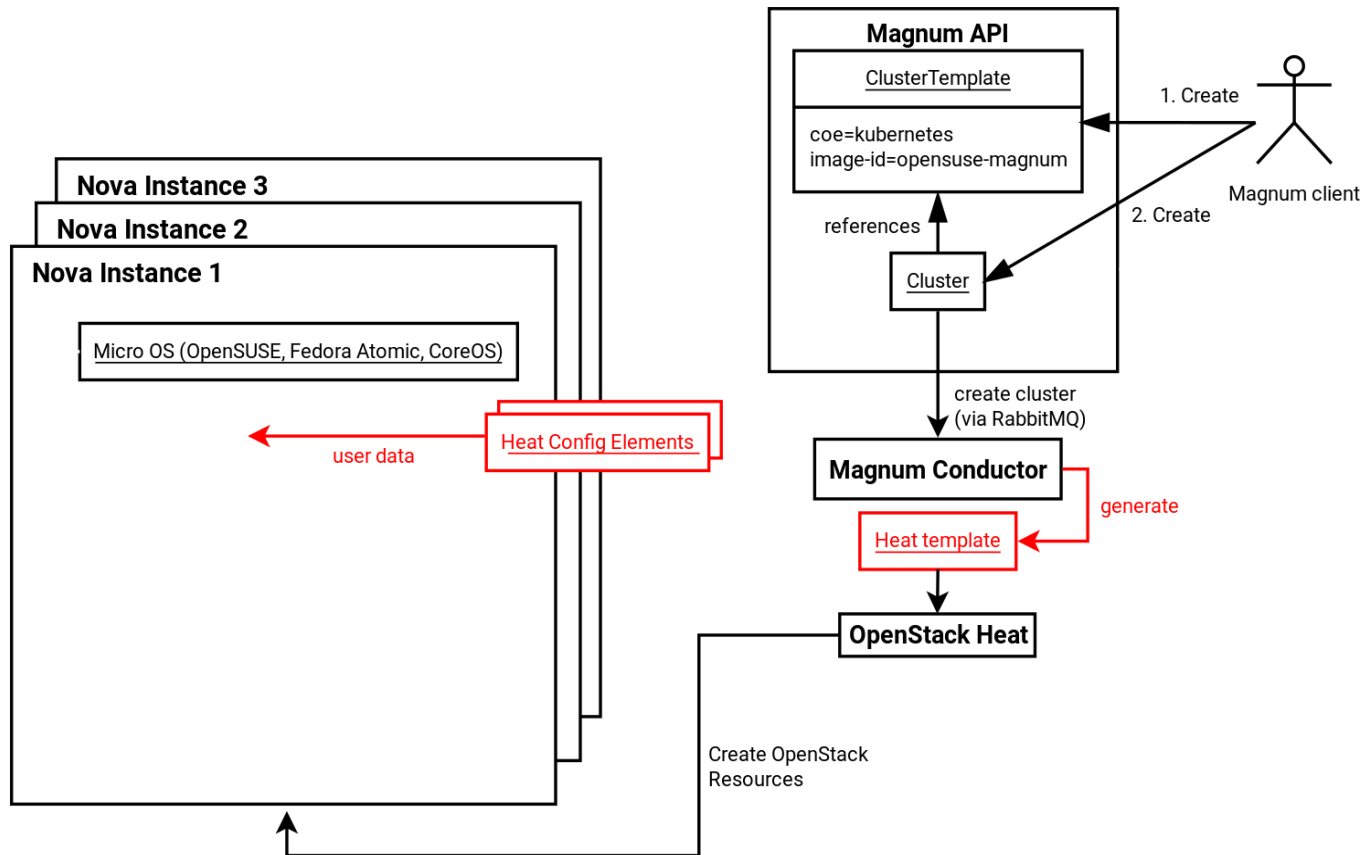
VMs Run Container Friendly OS Image



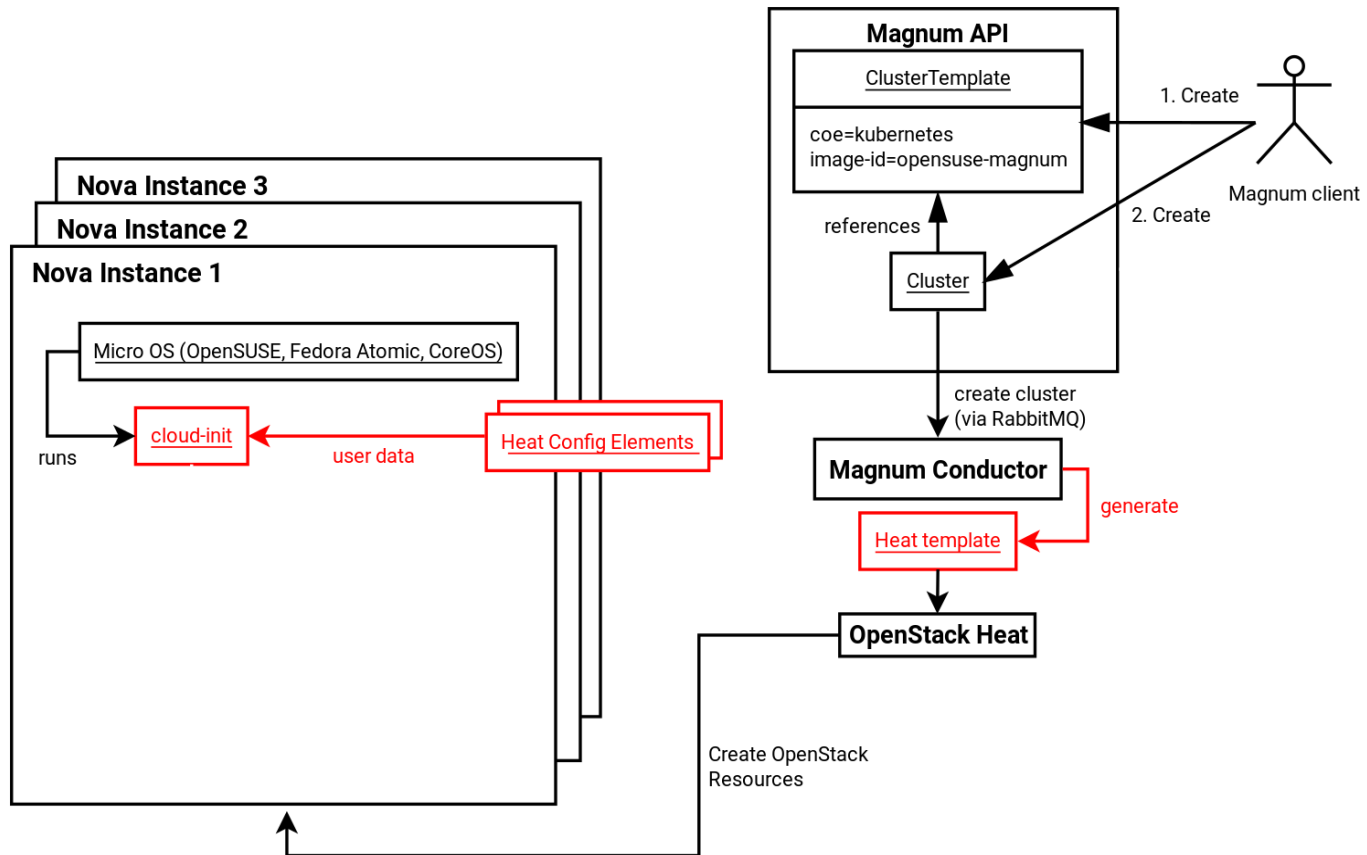
CloudConfig Snippets...



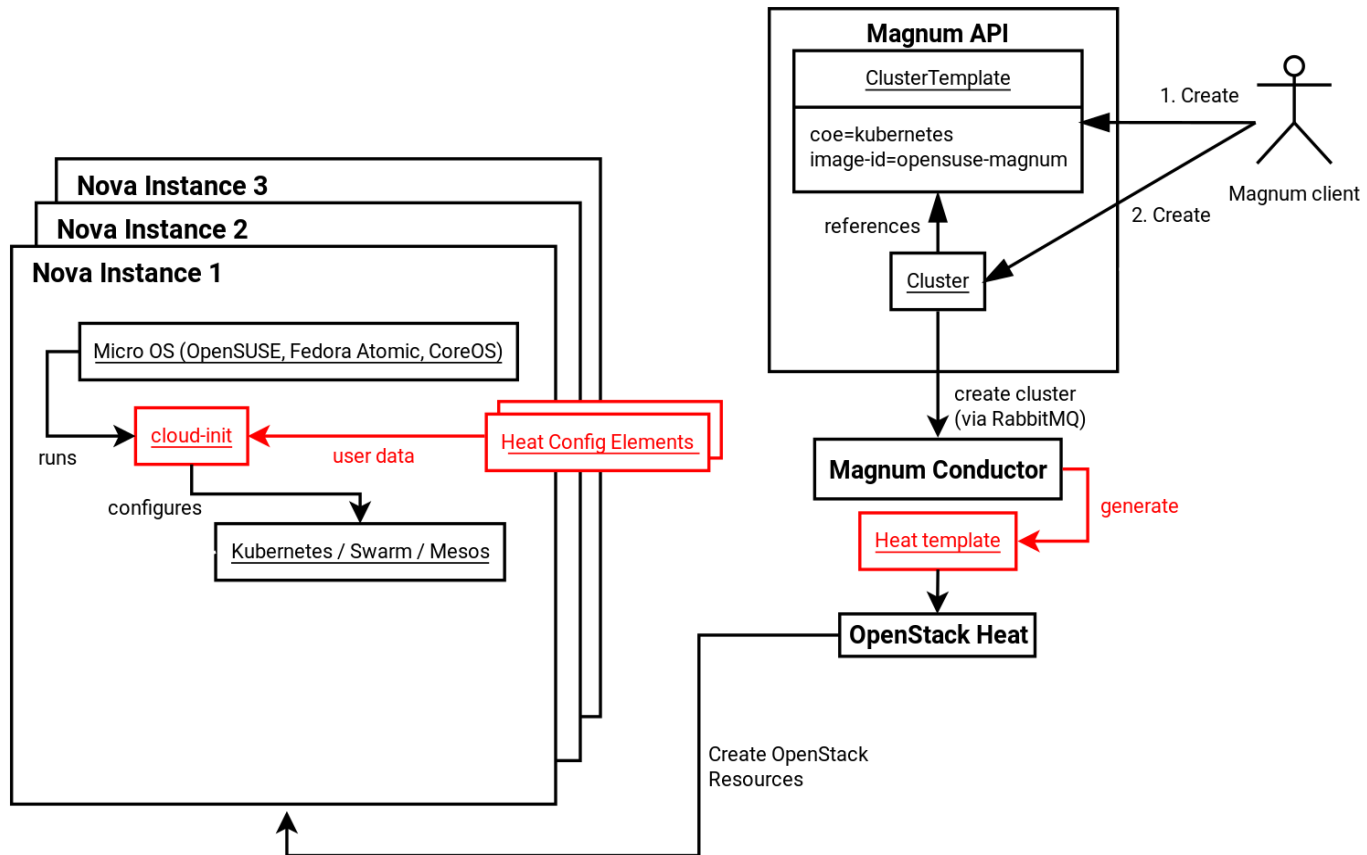
CloudConfig Snippets Become user-data



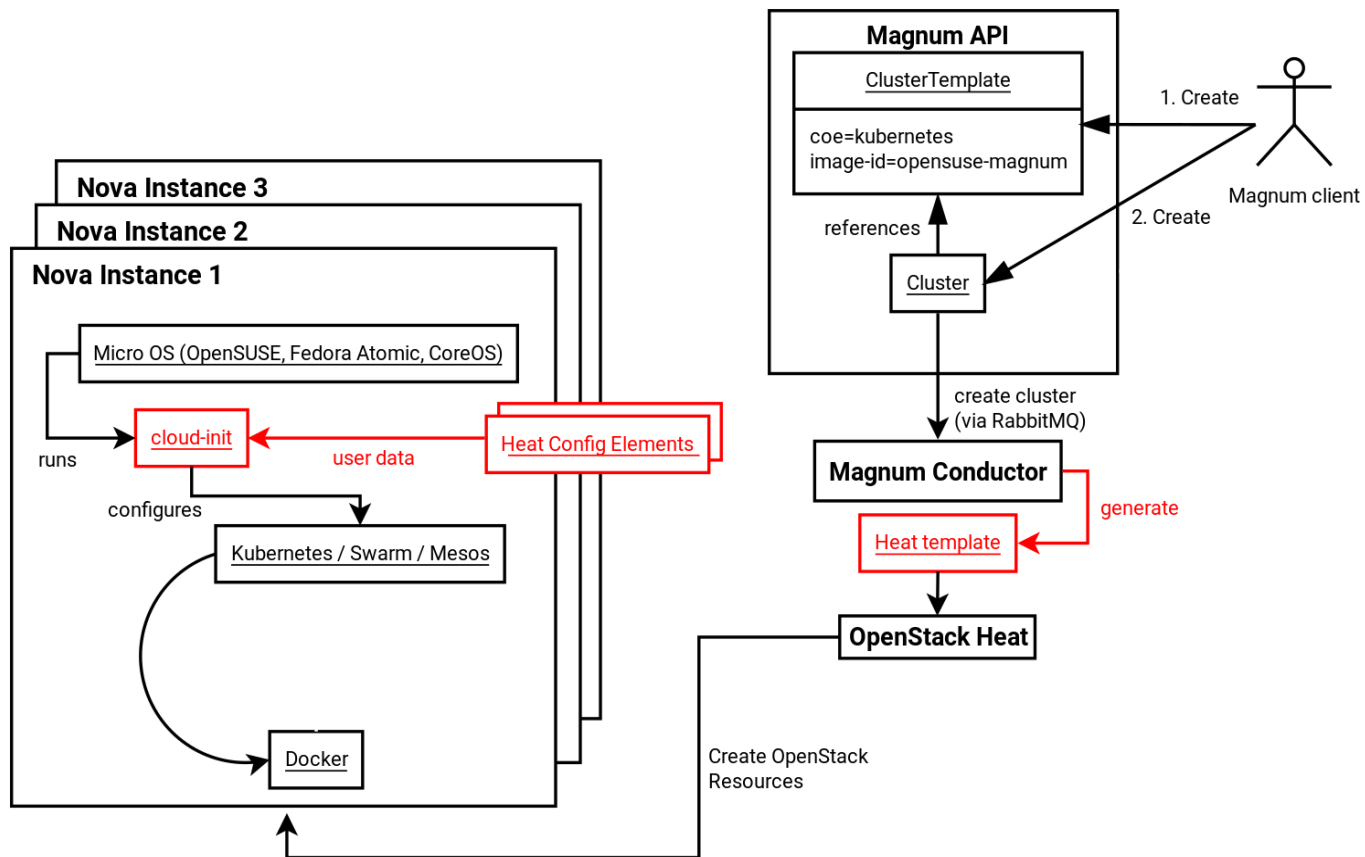
user-data run by cloud-init



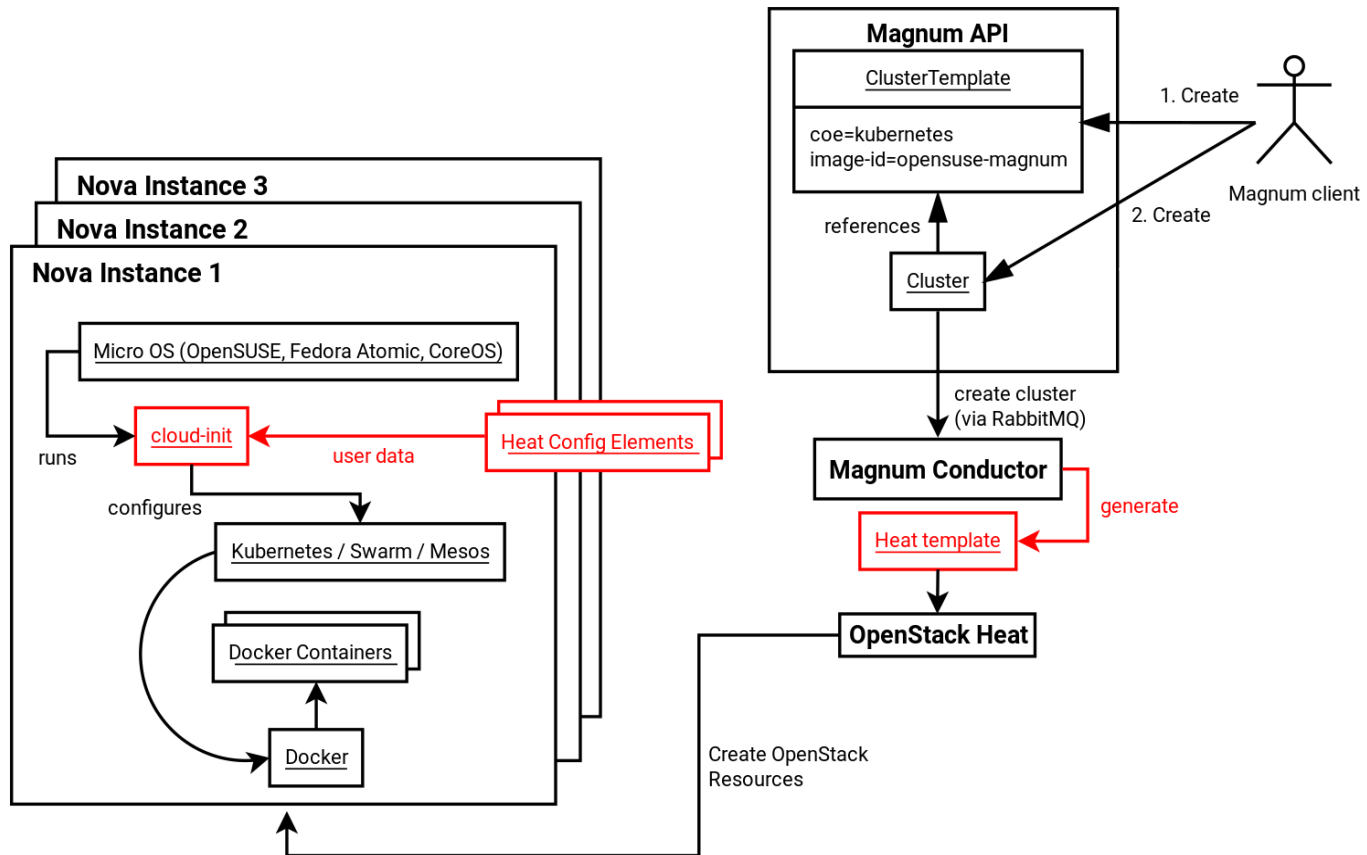
cloud-init configures Kubernetes



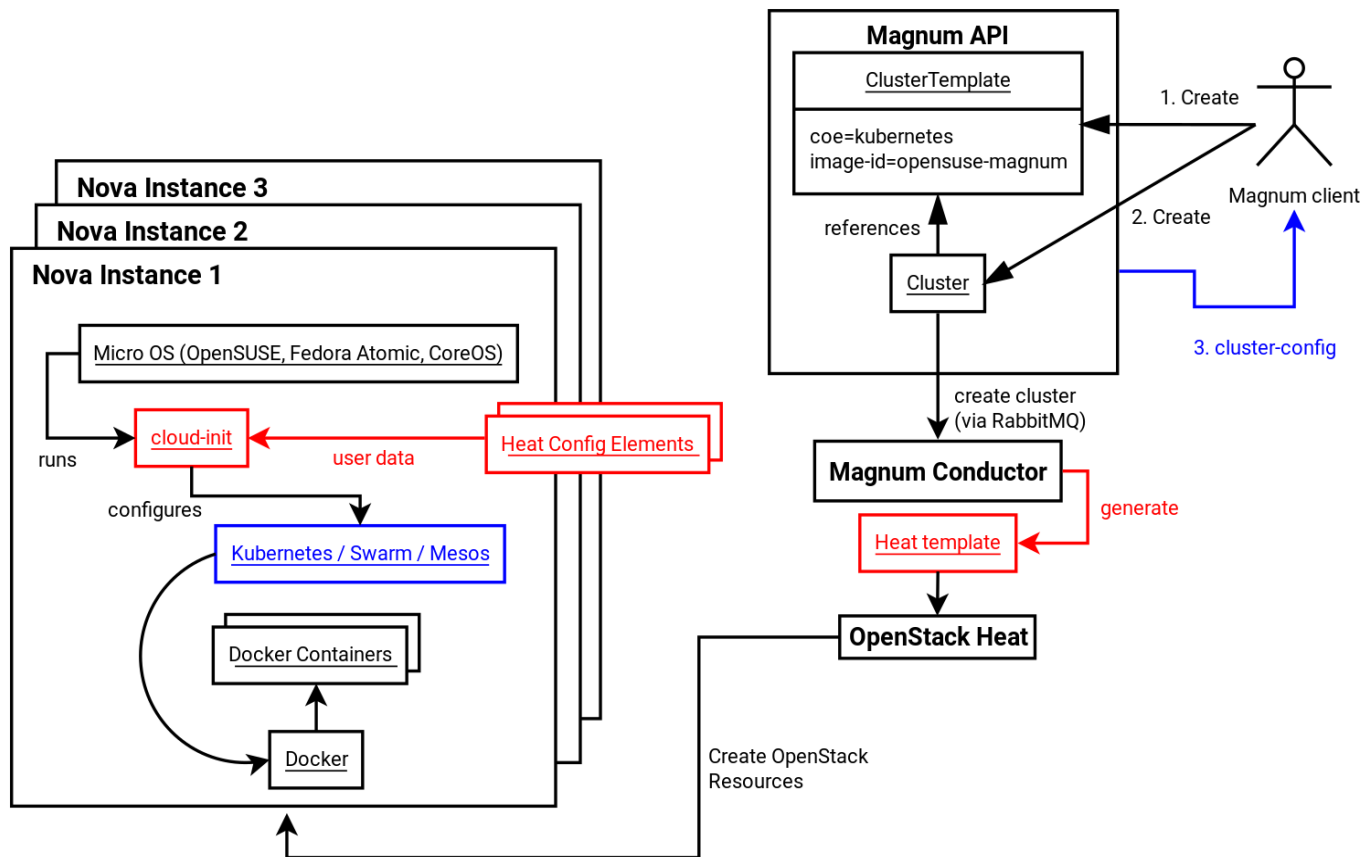
Kubernetes orchestrates Docker



Workload in Docker Containers

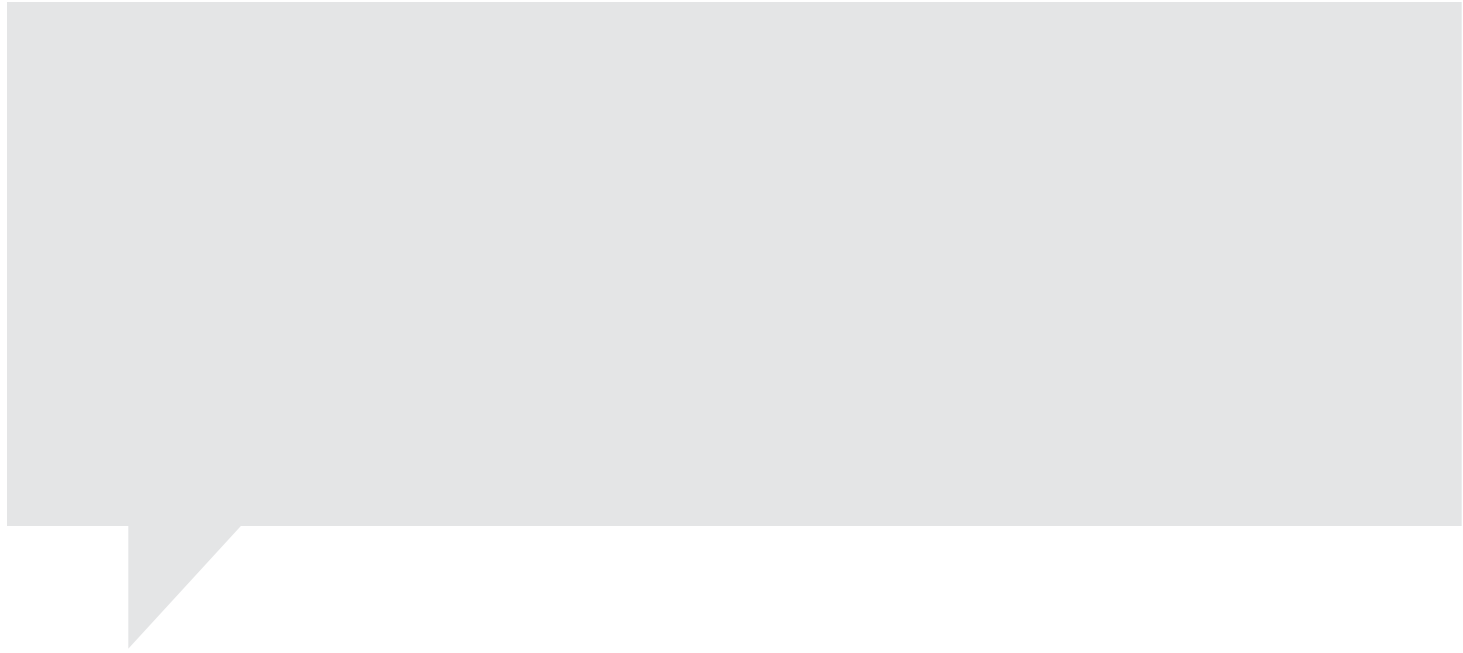


Kubernetes Credentials from Magnum API



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Thank you.







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