

# OpenStack Orchestration with Heat

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# Outline

- ▶ Heat
- ▶ Template Overview
- ▶ The Demo
- ▶ Q&A

Heat

# What is Heat?

API + UI for orchestration on OpenStack.

Describe you cloud deployment in a declarative language.

Heat will process and build it and keep it up.

# What can you do with it?

- ▶ Launch & provision instances with inter dependencies & parameters
- ▶ Attach block (cinder) or object (swift) storage
- ▶ Floating IPs
- ▶ Load balancing
- ▶ Autoscaling
- ▶ High availability (restart services, instances, the whole stack)
- ▶ Networking (quantum)

# AWS CloudFormation

`http://aws.amazon.com/cloudformation/`

- ▶ Inspiration for Heat
- ▶ Our original API and template formats are compatible
- ▶ Heat can be controlled via **boto**

# Relation with OpenStack

- ▶ Along with ceilometer the first external project accepted into incubation
- ▶ Using the same infrastructure (github, gerrit, launchpad, mailing lists, meetings)
- ▶ Follow the same coding style, architecture, packaging, etc.

# Heat Templates



# Structure

HeatTemplateFormatVersion: 2012-12-12

Description: This is an empty Heat template

Parameters:

...

Resources:

...

Outputs:

...

## Resource example

```
MyApacheServer:
  Type: AWS::EC2::Instance
  Properties:
    ImageId: f17-jeos
    InstanceType: {Ref: MyFlavor}
    KeyName: {Ref: MyApacheSSHKey}
    Metadata:
      ...
    UserData: |
      #!/bin/bash
      /opt/aws/bin/cfn-init
      rm -rf /
      echo Trololo
```

# Provisioning

List **packages**, **services**, **files** in the Metadata section.

Put custom code in the UserData section.

`cfn-init` installs packages, enables services & uploads files.

# CloudWatch

Monitors the instances' resources, can act on specified conditions:

- ▶ Start a new instance under high RAM/CPU utilization
- ▶ Spin down extra instances on low utilization
- ▶ Restart services/instances/the whole stack when it goes down

# The Demo

# Autoscaling

- ▶ A wordpress instance behind a load balancer
- ▶ Spin up a new instance when the RAM load  $> 50\%$
- ▶ Delete it when the load decreases

# The Heat community

- ▶ about 5 core contributors
- ▶ about 12 other contributors over time (7 outside of Red Hat)
  - ▶ testing, feature requests, bug reporting; little code
- ▶ Ceilometer collaboration

# Wrap Up

- ▶ <http://heat-api.org/>
- ▶ <https://github.com/openstack/heat>
- ▶ #heat on freenode (we're there pretty much 24/7)



