

# OpenStack Orchestration with Heat

Tomáš Šedovič

*Software engineer at Red Hat, Czech Republic*

[tsedovic@redhat.com](mailto:tsedovic@redhat.com)

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## Outline

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

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## 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.

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## 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)
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## AWS CloudFormation

<http://aws.amazon.com/cloudformation/>

- Inspiration for Heat
  - Our original API and template formats are compatible
  - Heat can be controlled via [boto](#)
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## 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.
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## Heat Templates

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## Structure

HeatTemplateFormatVersion: 2012-12-12  
Description: This is an empty Heat template

Parameters:  
...

Resources:  
...

Outputs:  
...

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## 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
```

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## Provisioning

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

Put custom code in the **UserData** section.

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

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## 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
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## The Demo

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## Autoscaling

- A wordpress instance behind a load balancer
  - Spin up a new instance when the RAM load > 50%
  - Delete it when the load decreases
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## 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
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## Wrap Up

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