Ceilometer

The OpenStack Metering Project

3 Feb 2013 @ FOSDEM
What About Billing?

Beginning of 2012:

- Billing has been left out of OpenStack core so far as it was not the primary problem and is not a trivial one...

- Yet almost every OpenStack deployment needs a way to track usage information
# Billing: 3 Step Process

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<tbody>
<tr>
<td><strong>Metering</strong></td>
<td>Collect usage data</td>
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<tr>
<td><strong>Rating</strong></td>
<td>Transform usage data into billable items and calculate costs</td>
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<tr>
<td><strong>Billing</strong></td>
<td>Create invoice, collect payment</td>
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Ceilometer Begins

- Started in May 2012
v0.1 Objectives (Folsom)

Focused only on metering for billing

Ceilometer aims to deliver a unique point of contact for billing systems to acquire all counters they need to establish customer billing, across all current and future OpenStack components. The delivery of counters must be traceable and auditable, the counters must be easily extensible to support new projects, and agents doing data collections should be independent of the overall system.
Grizzly objectives

Extended objective: cover measurement in general

The project aims to become the infrastructure to collect measurements within OpenStack so that no two agents would need to be written to collect the same data. It's primary targets are monitoring and metering, but the framework should be easily expandable to collect for other needs. To that effect, Ceilometer should be able to share collected data with a variety of consumers.
Roadmap

Folsom
- Delivered Oct 2012
- Collects base metering
  - nova
  - glance
  - cinder
  - quantum
- Basic API access

Grizzly
- Incubated Project
- Integration with Horizon
- Agents for other components
  - Swift
  - Ceph?
  - Nicira?
- SQLAlchemy storage driver
- Cleaner nova interaction
- Multi-Publisher
- API v2
  - User accessible API
  - More aggregation
  - Multi-dimension

Havana
- Core Project
- Integration with Synaps
- Integration with healthmon?
  - etc...

Metering Pipeline

Openstack Services

Metering Consumers
Metering Pipeline

Openstack Services

- Data acquisition
- Transformation
- Publication
- Persistence
- Aggregation

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↓

Metering Consumers

agents → conduits

APIs → databases
Architecture - Components

• **data acquiring agents**: compute, central, collector

• **agent hooks**: pollsters, notification handlers

• **publication conduits**: default via AMPQ, plug in support for REST, UDP etc.

• **database drivers**: mongoDB, sqlalchemey (future: cassandra, hbase)

• **aggregation**: via RESTful API (or MapReduce directly on DB?)
Architecture – polling flow

- **c-compute**
- **c-central**
- **c-collector**
- **c-store**
- **c-api**

- **hypervisor API**
- **public API**

- **nova-compute**
- **glance**
- **cinder**
- **...**
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Architecture – polling flow

c-compute  c-central  c-collector  c-store

AMQP

hypervisor API  public API

nova-compute  glance  cinder  ...

c-api
Architecture – notification flow
Architecture – notification flow
Use-cases

- Primary use-case is a rating/billing pipeline consuming metering data
- Alternative use-cases ...
  - Analytics:
    - capacity planning tools
    - adaptive scheduling algorithms
    - derive optimal pricing models
    - resource rationing with fuzzy quotas
  - Realistic pre-prod simulations/loadtests
  - Visualization
    - heat-maps/graphing to reveal usage patterns
  - Monitoring
    - integration with diverse monitoring frameworks
Getting involved

- Expose your use cases to us
- openstack-dev@lists.openstack.org
  - [ceilometer] or [metering] in the subject
- IRC: #openstack-metering@Freenode
  - Join our weekly meeting
    http://wiki.openstack.org/Meetings/MeteringAgenda
- Install and deploy Ceilometer!
  - Devstack has it
  - Allows you to fix documentation
- Triage bugs
  - Reproduce and confirm
  - Close outdated bugs
- Review code
Development

- **OpenStack development workflow**
  - Hosted on Launchpad
  - Patch review with Gerrit
  - CI with Jenkins

- **Blueprints**
  - Frozen a few weeks after the design summit
  - Check with the team for milestone and assignment

- **Bug squashing**
  - Bugs are tagged with effort size
  - Pick a bug on Launchpad
Bug Squash Day

- Tuesday 5th March 2013
- #openstack-metering@Freenode
- Good way and best time to get in!
Questions?

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