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Ceilometer

The OpenStack Metering Project

3 Feb 2013 @ FOSDEM

What About Billing?

Beginning of 2012:

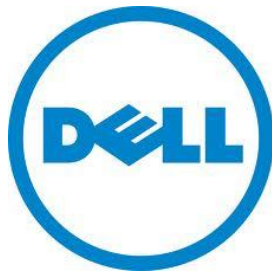
- Billing has been left out of OpenStack core so far as it was not the primary problem and is not a trivial one...
- Yet almost every OpenStack deployment needs a way to track usage information

Billing: 3 Step Process

Metering	Collect usage data
Rating	Transform usage data into billable items and calculate costs
Billing	Create invoice, collect payment

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

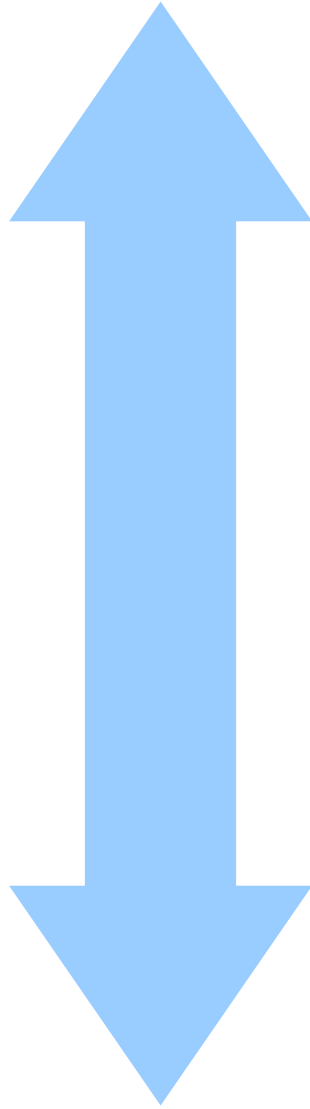
- Incubated Project
- Integration with Horizon
- Agents for other components
 - Swift
 - Ceph?
 - Nicira?
- SQLAlchemy storage driver
- Cleaner nova interaction
- Multi-Publisher
- API v2
 - User accessible API
 - More aggregation
 - Multi-dimension

Havana

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

Metering Pipeline

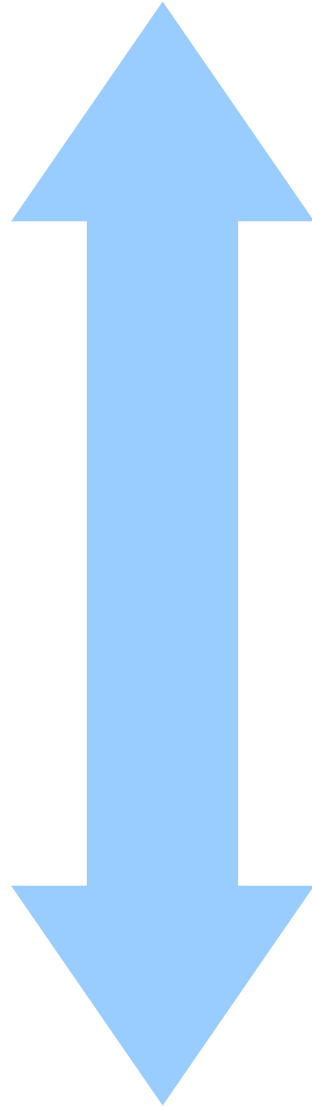
Openstack Services



Metering Consumers

Metering Pipeline

Openstack Services

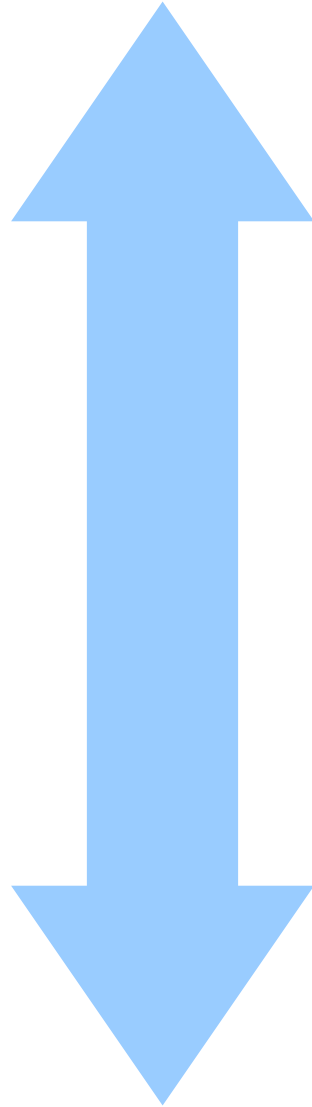


- Data acquisition
- Transformation
- Publication
- Persistence
- Aggregation

Metering Consumers

Metering Pipeline

Openstack Services



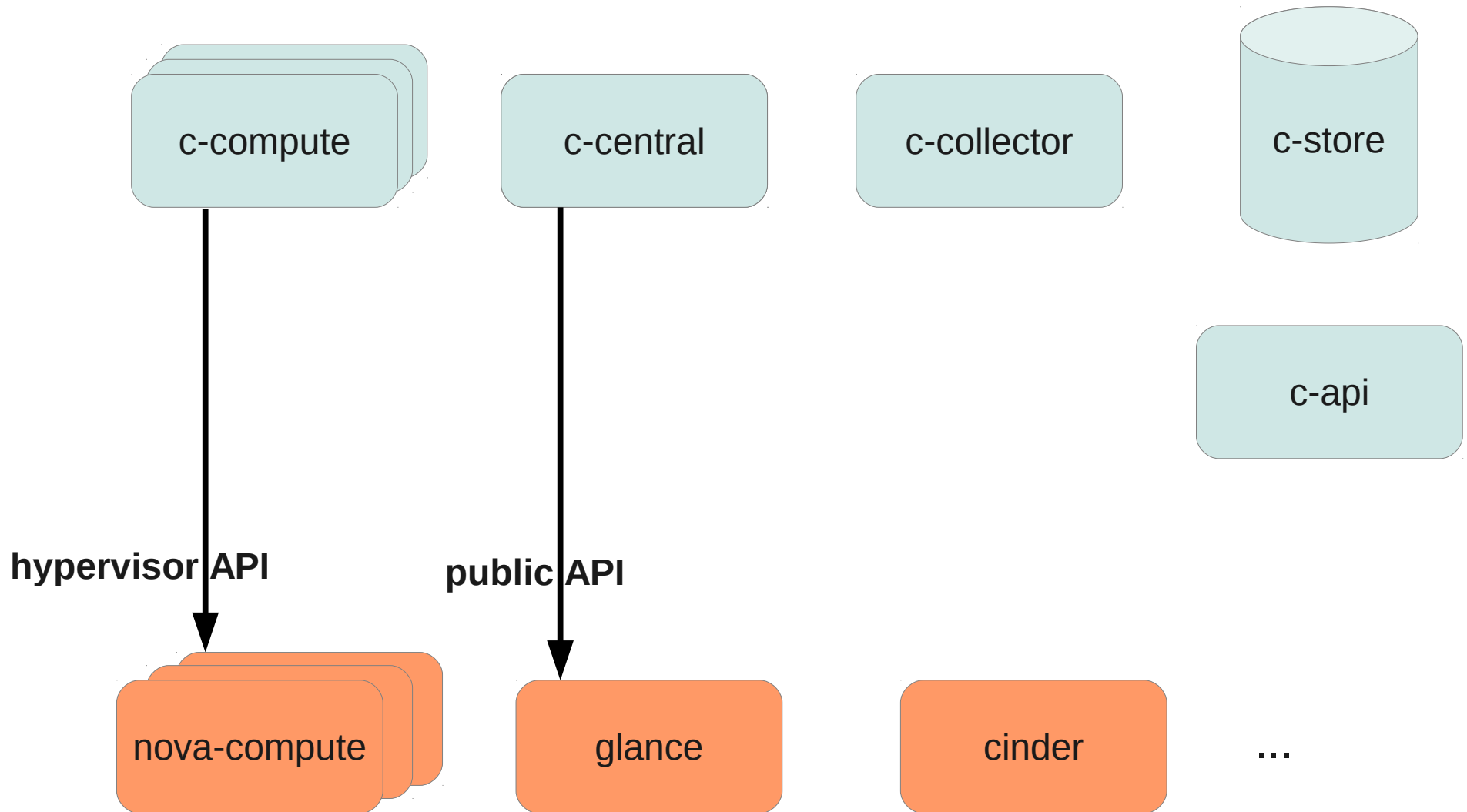
- Data acquisition
 - Transformation
 - Publication
 - Persistence
 - Aggregation
- } agents
- conduits
- databases
- APIs

Metering Consumers

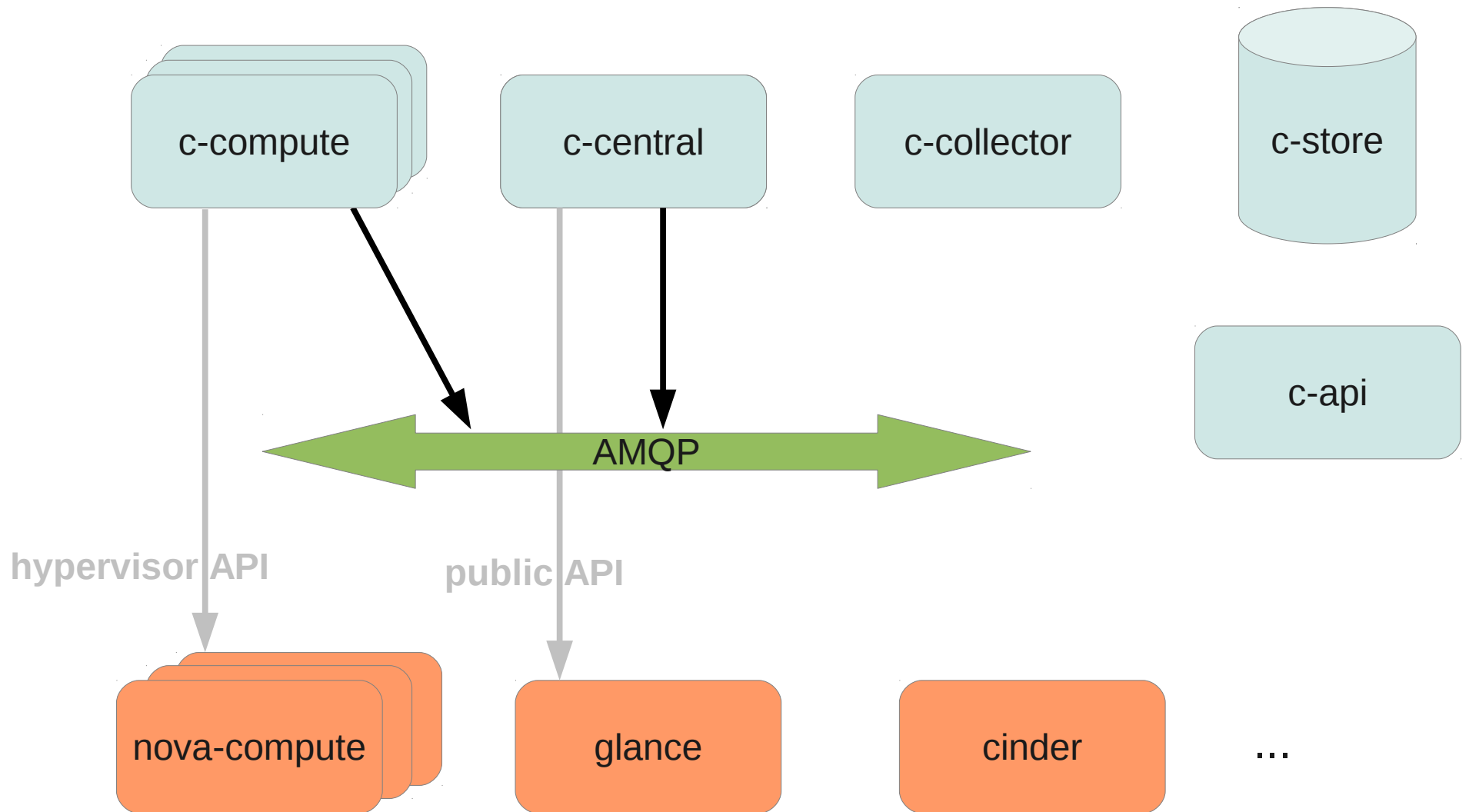
Architecture - Components

- **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, sqlalchemy (future: cassandra, hbase)
- **aggregation:** via RESTful API (or MapReduce directly on DB?)

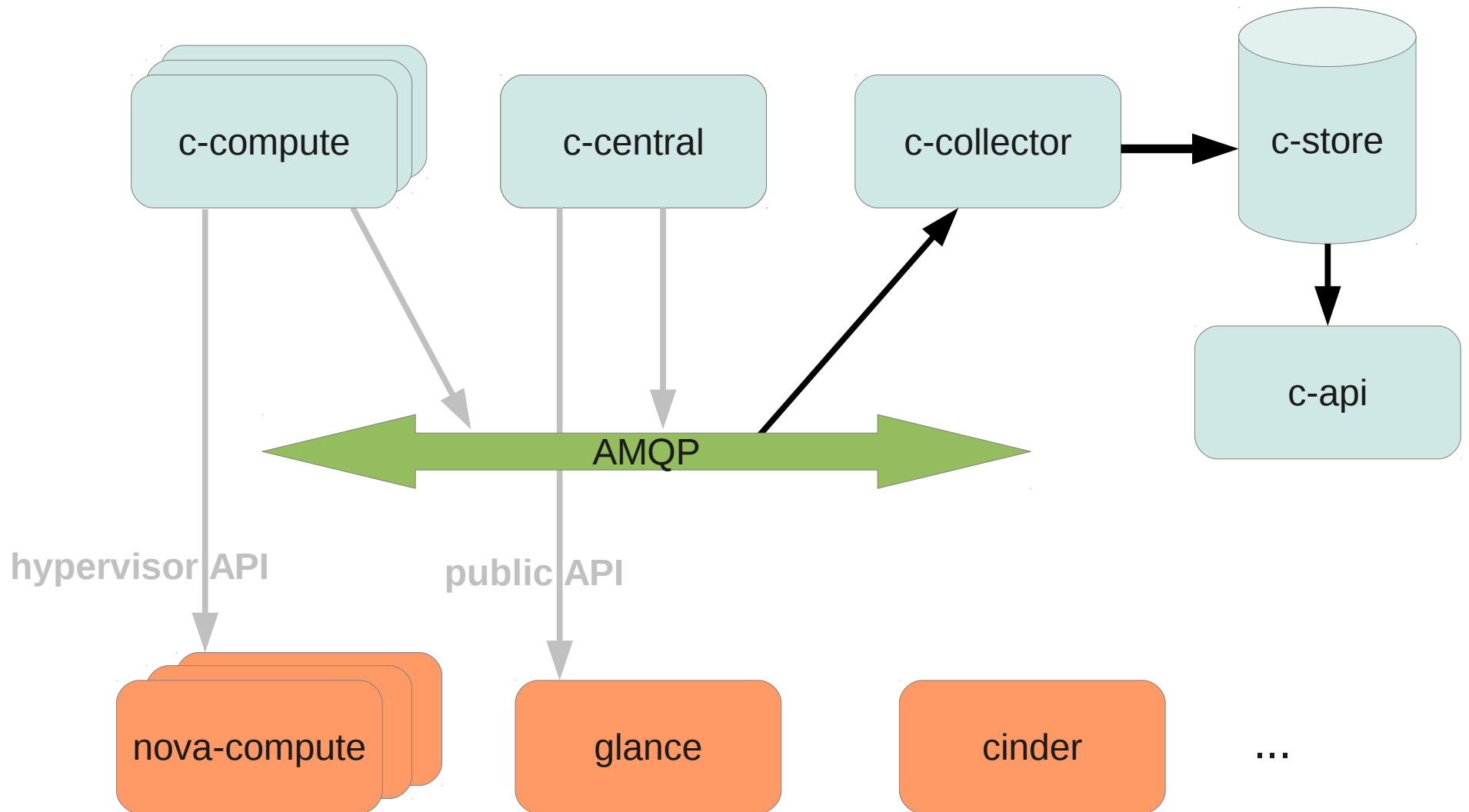
Architecture – polling flow



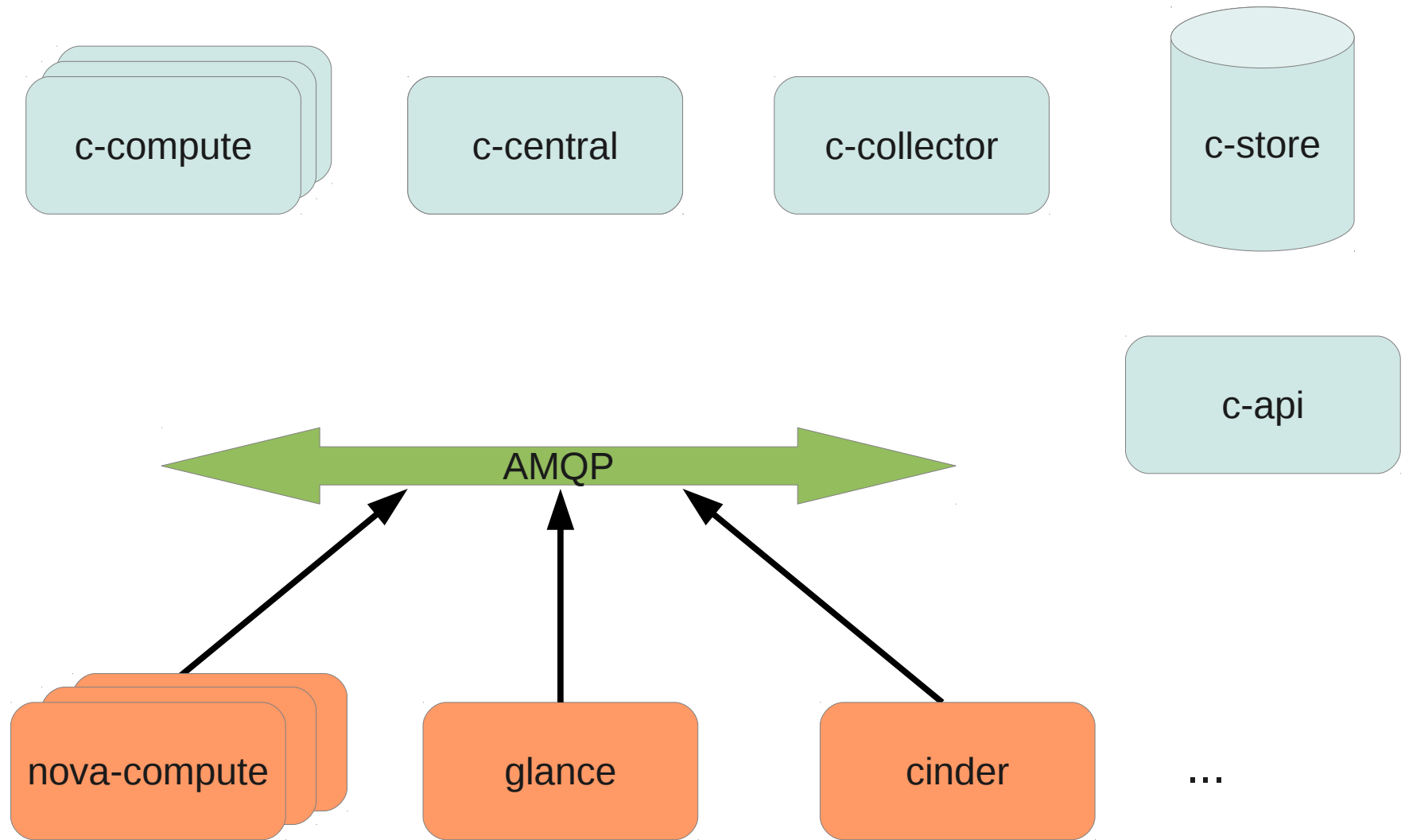
Architecture – polling flow



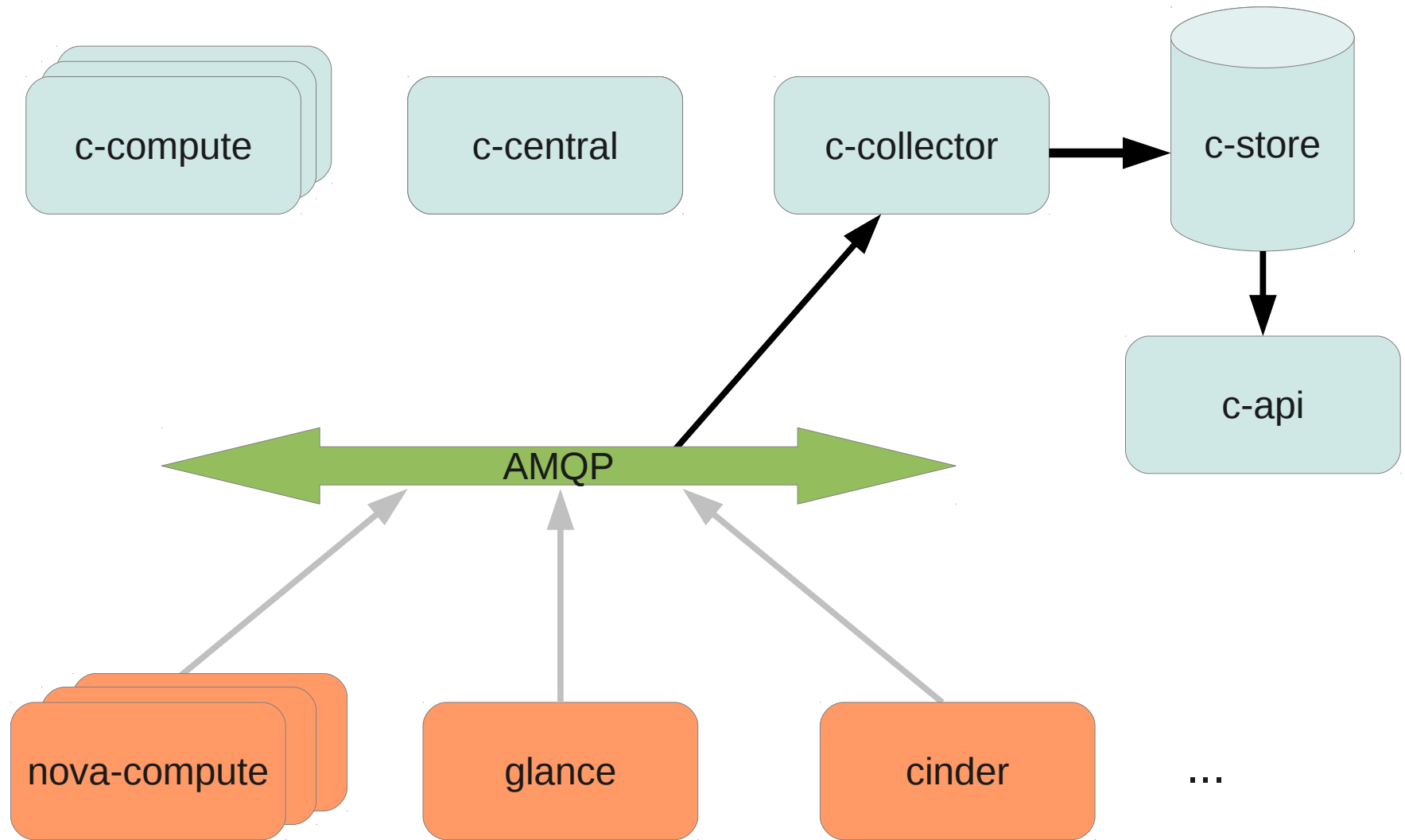
Architecture – polling flow



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?

<http://launchpad.net/ceilometer>

<http://ceilometer.readthedocs.org>

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