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Ceilometer

The OpenStack metering project

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Problems to solve

- Collecting per user/tenant usage data
  - For every OpenStack component
  - In a single place
- Retrieving usage data
  - From a single place
- Doing this with an open source project
  - Everyone did this in its corner so far :-(

Ultimate goal?

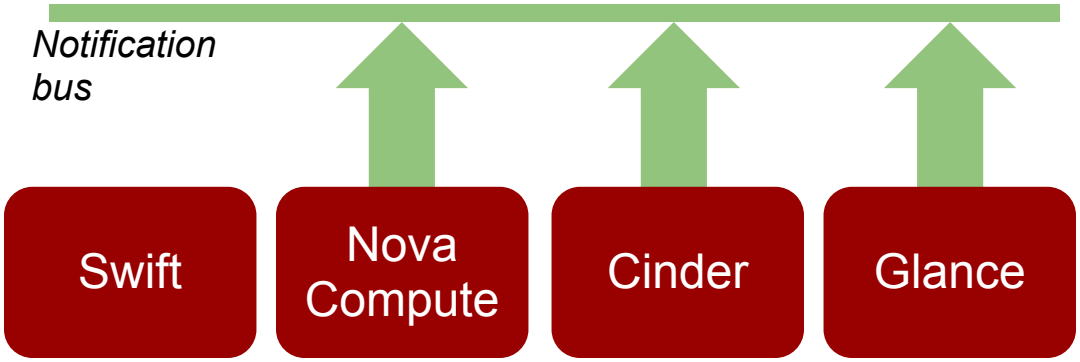
Billing customers!

or whatever else you want, like capacity planning or pretty usage statistics…

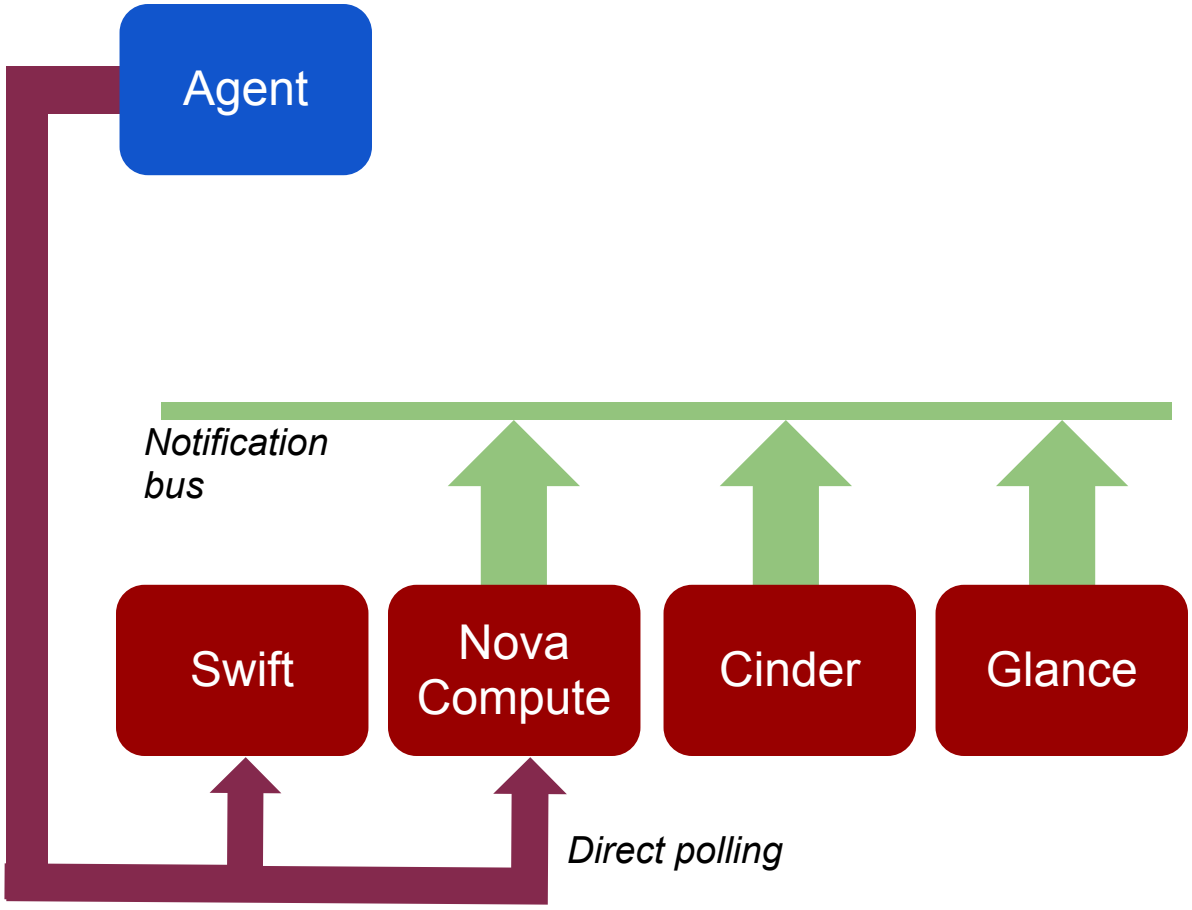
Ceilometer begins

- Starts in May 2012
  - eNovance
  - Canonical
- Developed in StackForge
  - Same process as OpenStack
- Minimal set of meters defined
- Targetting OpenStack core

Design: base



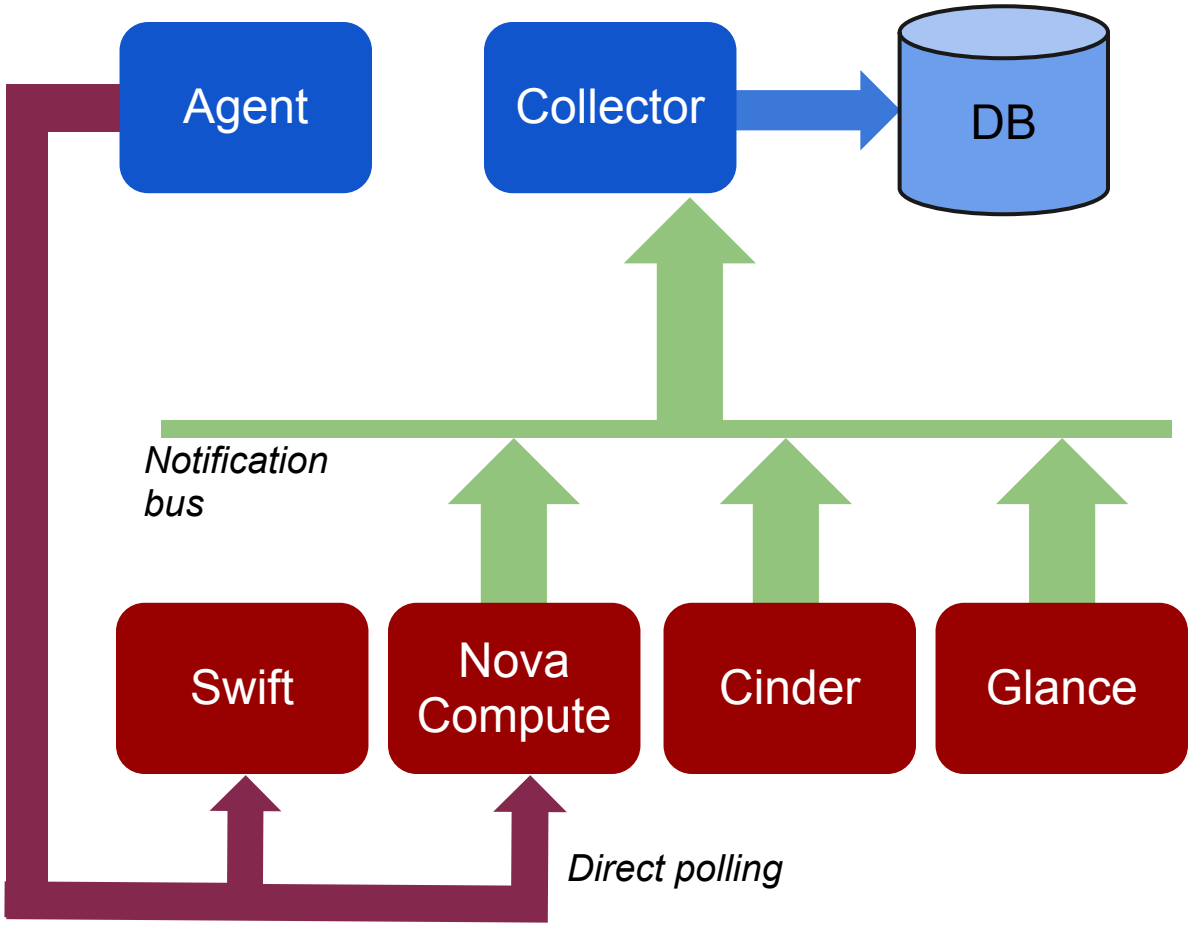
Design: agent



Ceilometer Agent

- One agent per OpenStack component
- Polling
  - Time based
    - Swift storage usage
    - Nova instance CPU usage
  - Time granularity configurable
- Send results to Ceilometer Collector
  - Using openstack.common.rpc
- Extensible via plugins

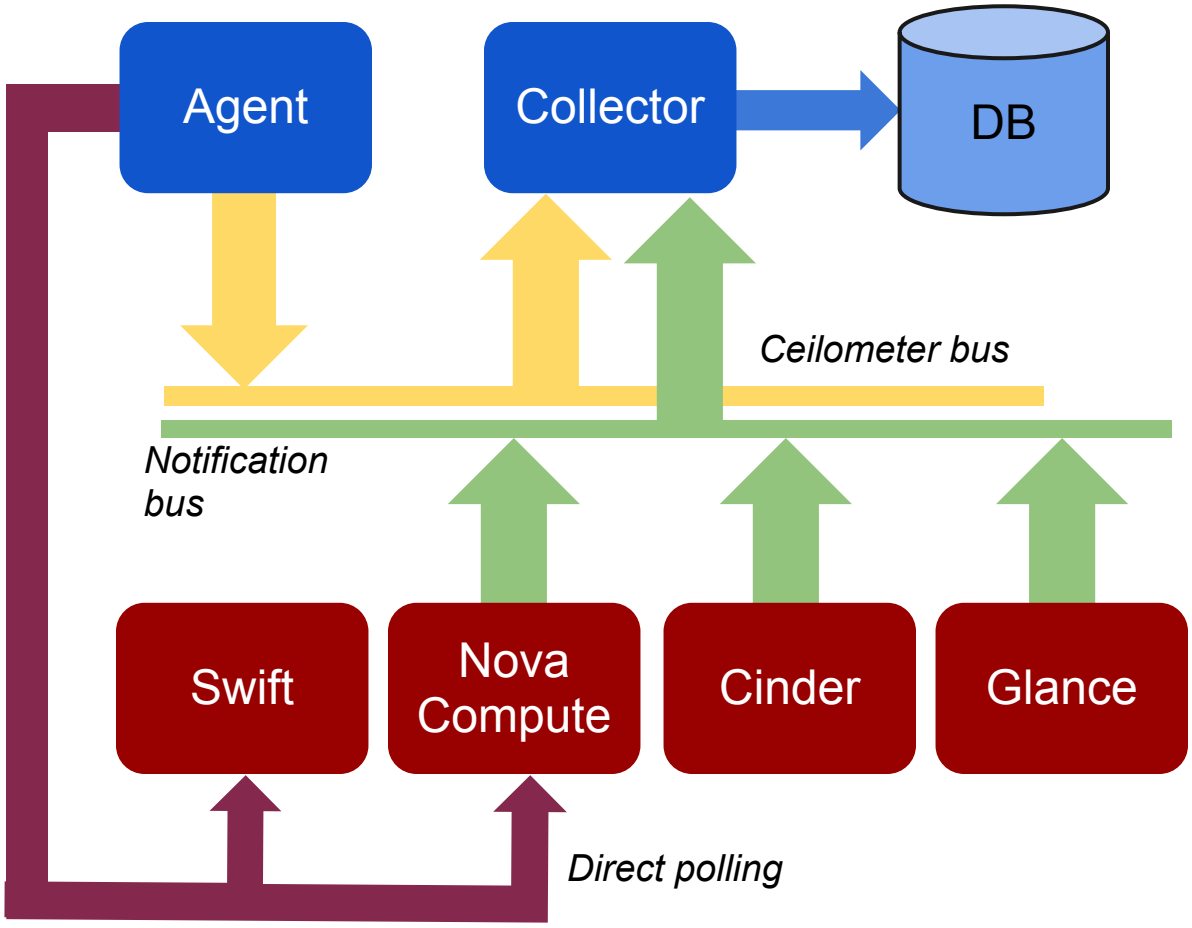
Design: collector



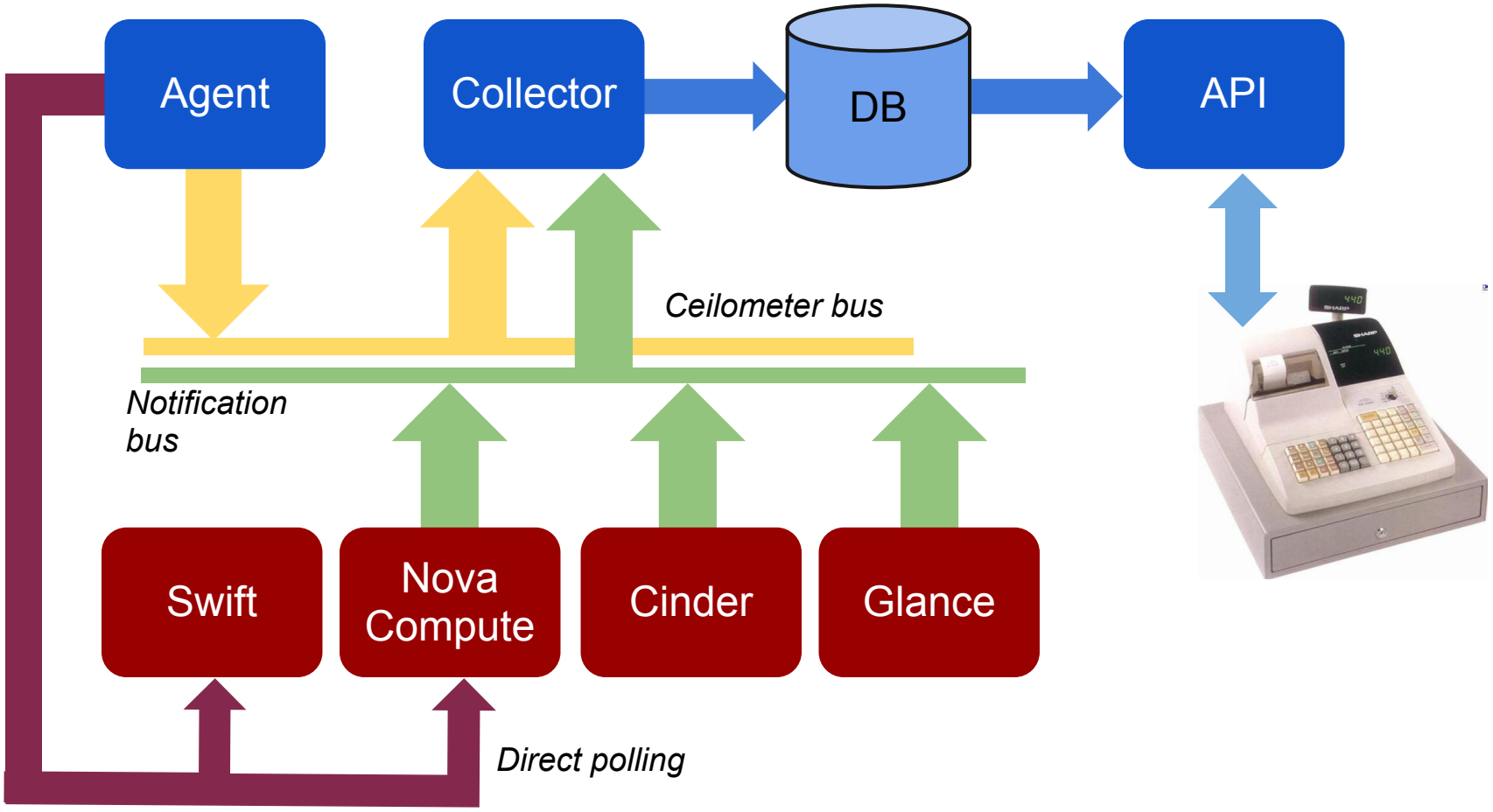
Ceilometer Collector

- Listen to events from Ceilometer Agent
  - Verify message signature
- Listen to notifications
  - From Nova
  - From Nova-volume / Cinder
  - From Glance
- Store to database
  - Engine based, pick the one you want or implement it!
    - MongoDB (started)
    - SQLAlchemy (planned)
  - No consolidation done, raw events

Design: bus


Agent
Collector
DB
Ceilometer bus
Notification bus
Swift
Nova Compute
Cinder
Glance
Direct polling

Design: API


Agent
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Ceilometer API

- Access the database via engine
- Export data via REST API
  - `GET /v1/[SOURCES/<SOURCE>/]USERS/<USER_ID>/<METER>/VOLUME`
  - `GET /v1/[SOURCES/<SOURCE>/]USERS/<USER_ID>/RESOURCES/<RESOURCE_ID>/<METER>/DURATION`
  - `...`

Design keys

- Scalable
  - …if your database is too
- Message signature
  - Non-repudiation is planned
- Only one entry point to get data
- Extensible, add your own:
  - Agent
  - Agent plugin
  - Storage engine
  - Meters
- Use openstack.common components

Roadmap

- Version 1 (delivered with Folsom)
  - Collect base metering info
  - Provides basic API access
- Version 2 (delivered with Grizzly)
  - API extension
  - Integrate with Horizon
  - New agent for other OpenStack components
    - Heat
    - Quantum
- Version 3 (delivered with H)
  - Core project

Project technical status

- Agent
  - 80 % communication with the collector
  - 60 % of Nova-compute
  - 0 % of Nova-network
  - 0 % of Swift
- Collector
  - 80 % communication with the agent
  - 30 % database storage
  - 0 % of Nova-volume / Cinder
  - 0 % of Glance
- API
  - 0 %

Project status

- Now leaded by:
  - Julien Danjou
  - Dreamhost (Doug Hellmann)
  - Canonical (Nick Barcet & more to come)
- Proposed for incubation
- Project Technical Leader election
  - Starting today!

Questions?

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