



# The OpenStack Project and Foundation

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#ICCLab

[www.cloudcomp.ch](http://www.cloudcomp.ch)

# OpenStack Genesis

2005 2010



2011



# OpenStack Status

## OpenStack Releases

Series	Status	Releases		Projects
Folsom	Under development	Due	Sep 27, 2012	Nova Swift Glance Keystone Horizon Quantum
Essex	Current stable release	<a href="#">2012.1</a>	Apr 5, 2012	<a href="#">Nova</a> <a href="#">Swift</a> <a href="#">Glance</a> <a href="#">Keystone</a> <a href="#">Horizon</a>
		<a href="#">2012.1.1</a>	Jun 22, 2012	<a href="#">Nova</a> <a href="#">Glance</a> <a href="#">Keystone</a> <a href="#">Horizon</a>
		<a href="#">2012.1.2</a>	Aug 10, 2012	<a href="#">Nova</a> <a href="#">Glance</a> <a href="#">Keystone</a>
Diablo	Community-supported, security-supported	<a href="#">2011.3</a>	Sep 22, 2011	<a href="#">Nova</a> <a href="#">Swift</a> <a href="#">Glance</a>
		<a href="#">2011.3.1</a>	Jan 19, 2012	<a href="#">Nova</a> <a href="#">Glance</a>
Cactus	Deprecated	<a href="#">2011.2</a>	Apr 15, 2011	<a href="#">Nova</a> <a href="#">Swift</a> <a href="#">Glance</a>
Bexar	Deprecated	<a href="#">2011.1</a>	Feb 3, 2011	<a href="#">Nova</a> <a href="#">Swift</a> <a href="#">Glance</a>
Austin	Deprecated	<a href="#">2010.1</a>	Oct 21, 2010	<a href="#">Nova</a> <a href="#">Swift</a>

# OpenStack Service Model

Cloud Computing

Software as a Service

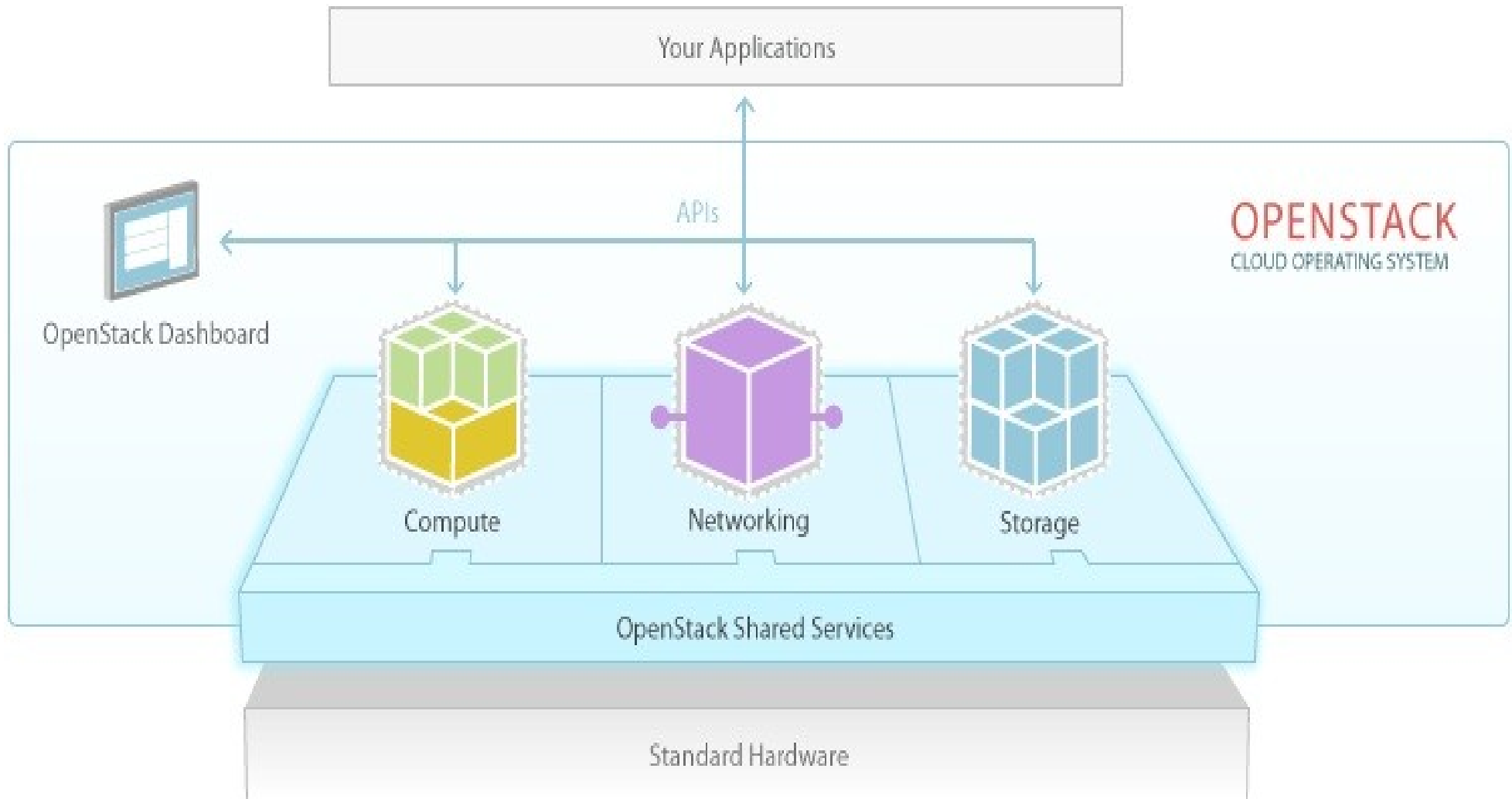
Platform as a Service

Infrastructure  
as a Service

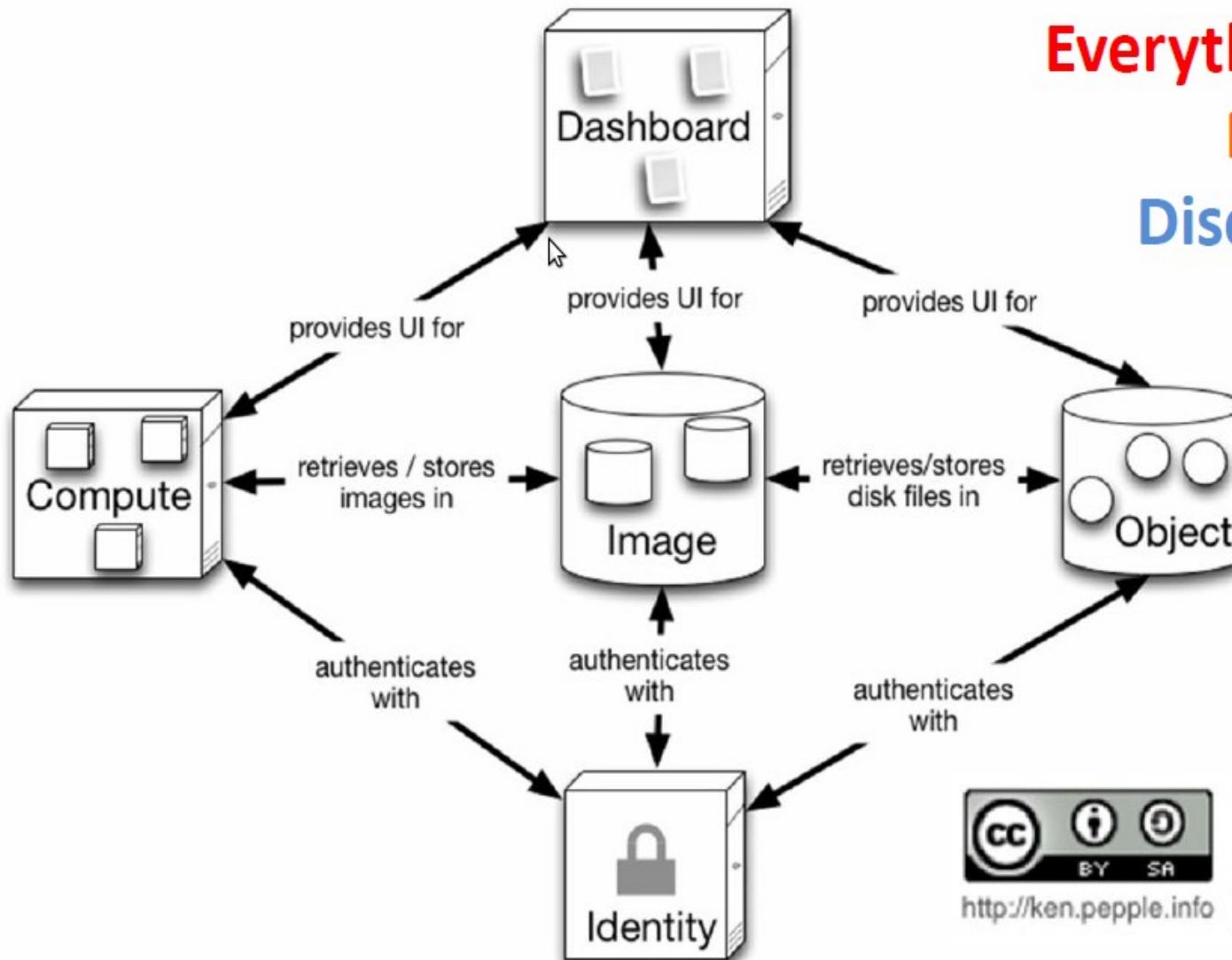


openstack™

# OpenStack Technical Scope



# OpenStack Architecture



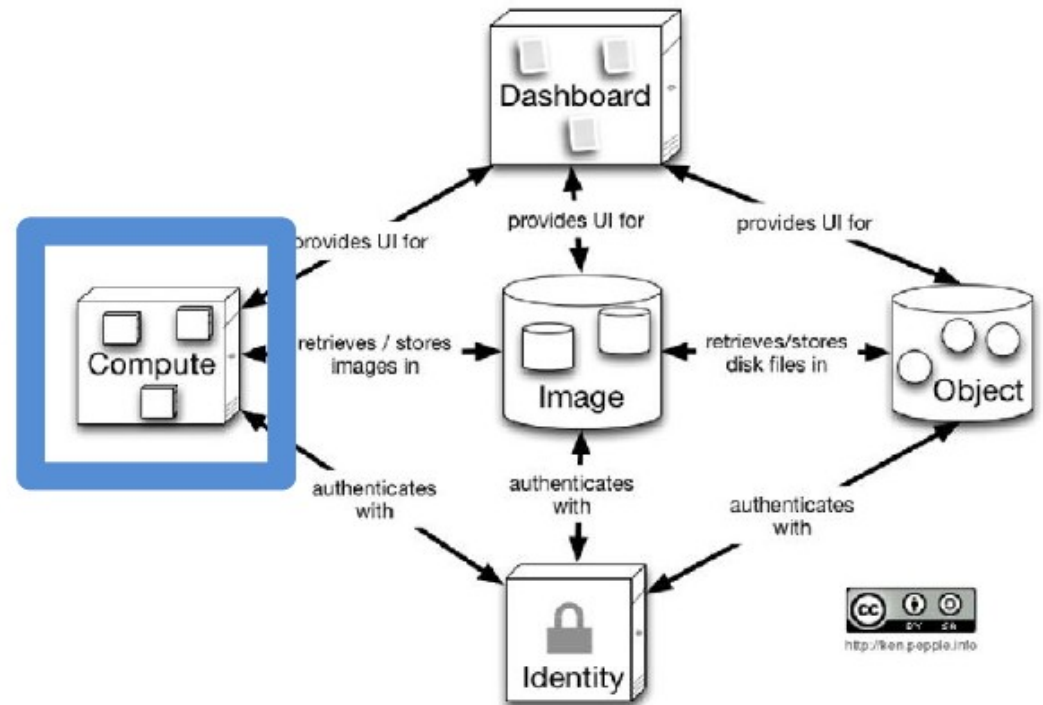
**Everything has an API**  
**Message based**  
**Discrete Pluggable**  
**Components**



<http://ken.pepple.info>

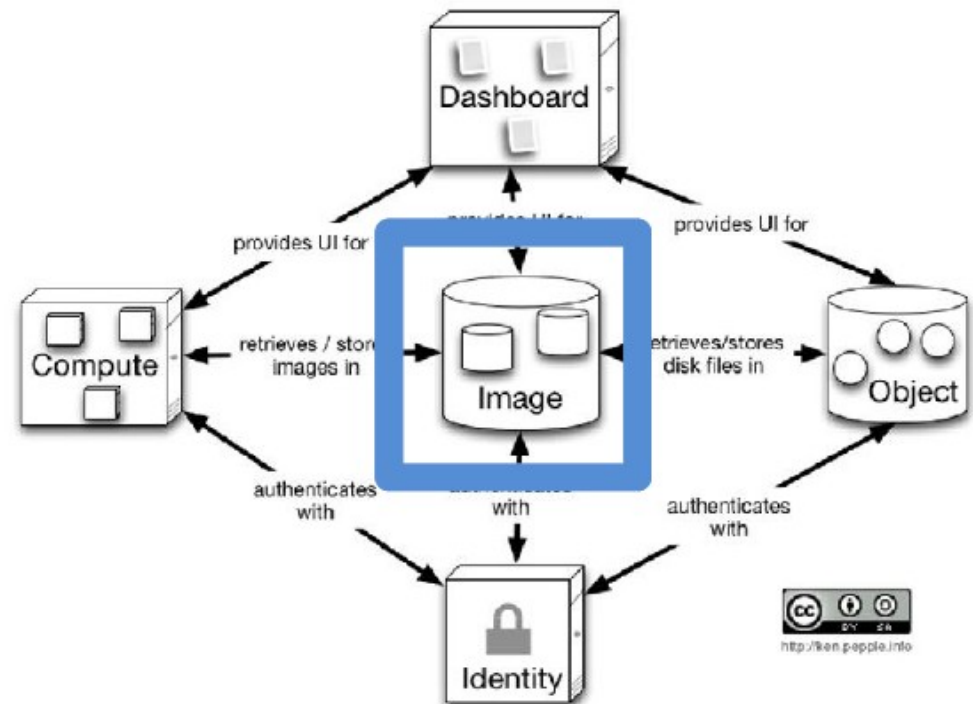
# OpenStack Nova

- **Nova:** Provides virtual servers on demand
  - KVM, Xen, VMware, HyperV, VirtualBox, LXC
- Looks after scheduling, networking & Block Storage
  - Future componentisation via Cinder and Quantum



# OpenStack Glance

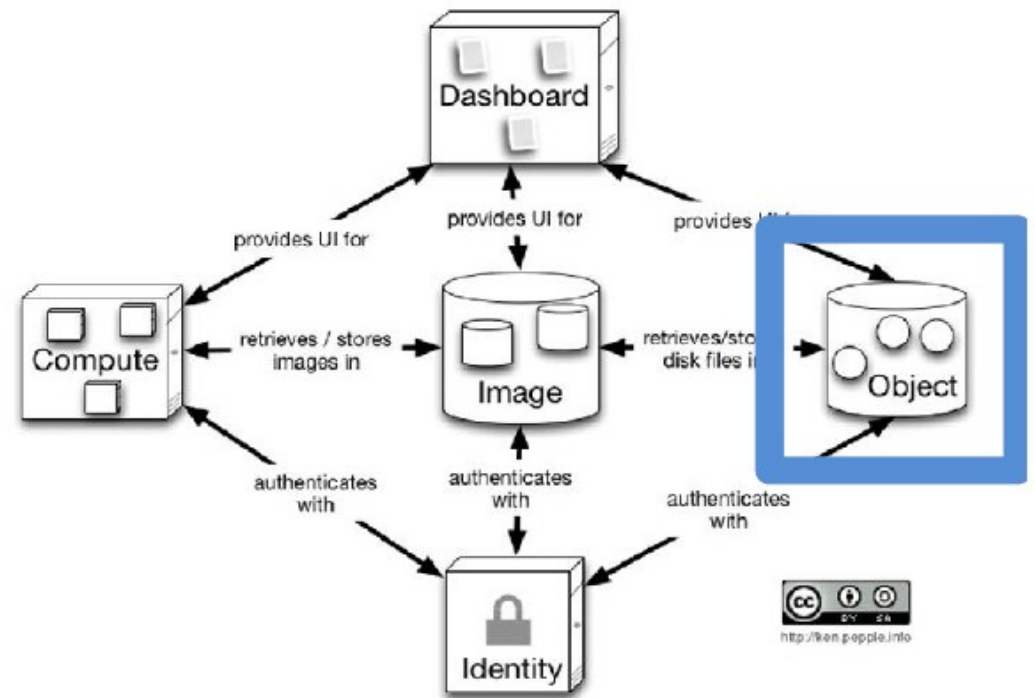
- **Glance:** Virtual Machine Image Registration and Storage
  - Storage via pluggable backends





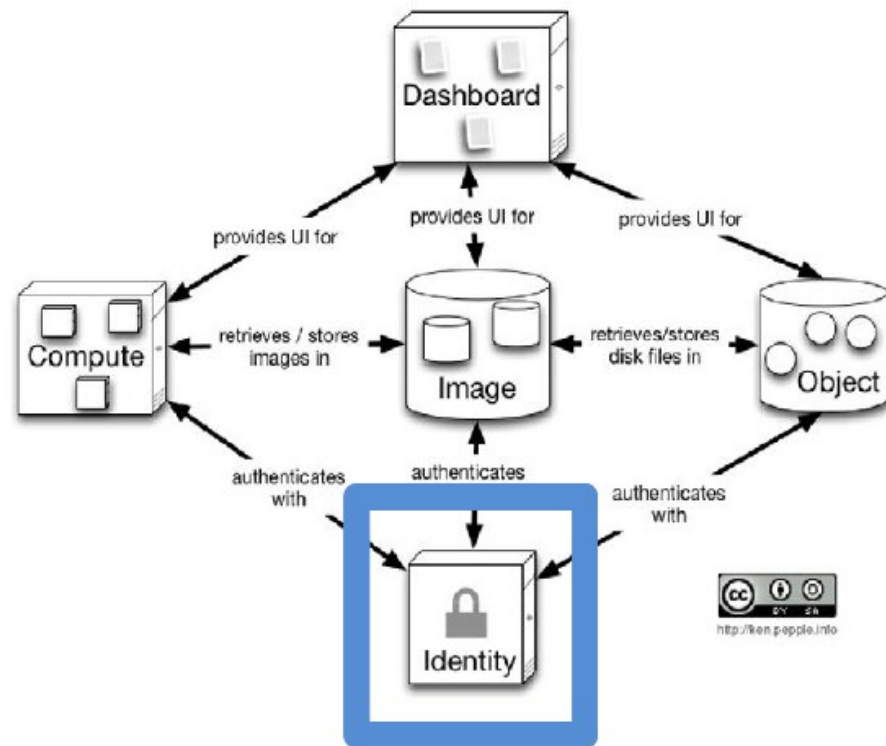
# OpenStack Swift

- **Swift:** Store & Retrieve data
- Data (*objects*) are stored in buckets (*containers*)
- Eventually consistent design



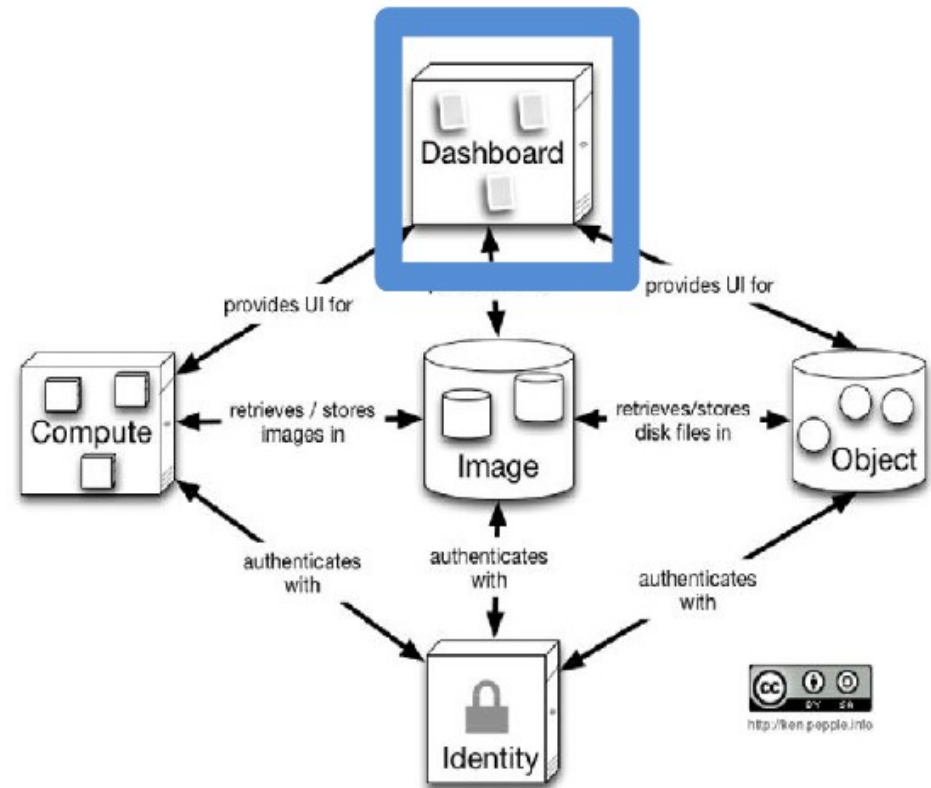
# OpenStack Keystone

- **Keystone:** authentication and authorization
  - all the OpenStack services.
- Service type catalog of services.
- Pluggable front and back ends



# OpenStack Horizon

- **Horizon:** A modular web-based user interface for all the OpenStack services
- Core functionality
  - Other via cmd. line



# OpenStack Projects

OpenStack is organized into a number of software projects working towards the OpenStack mission.

- Some of these are official projects under the direct control of the OpenStack community
- Some are related to OpenStack and not part of OpenStack charter or release process

## OpenStack official projects

### Core Projects (Folsom release)

- » OpenStack Compute (nova): <https://launchpad.net/nova>
- » OpenStack Object Storage (swift): <https://launchpad.net/swift>
- » OpenStack Image Service (glance): <https://launchpad.net/glance>
- » OpenStack Identity (keystone): <https://launchpad.net/keystone>
- » OpenStack Dashboard (horizon): <https://launchpad.net/horizon>
- » OpenStack Networking (quantum): <https://launchpad.net/quantum>
- » OpenStack Block Storage service (cinder): <https://launchpad.net/cinder>

### Incubated Projects

- » (none)

### Library Projects

- » OpenStack common library: <https://launchpad.net/openstack-common>
- » Python nova client library: <https://launchpad.net/python-novaclient>
- » Python swift client library: <https://launchpad.net/python-swiftclient>
- » Python glance client library: <https://launchpad.net/python-glanceclient>
- » Python keystone client library: <https://launchpad.net/python-keystoneclient>
- » Python quantum client library: <https://launchpad.net/python-quantumclient>
- » Python cinder client library: <https://launchpad.net/python-cinderclient>

### Gating Projects

- » Devstack (development deployment script): <https://launchpad.net/devstack>
- » Tempest (integration testsuite): <https://launchpad.net/tempest>
- » openstack-nose (NOSE plugin used in tests)

# OpenStack Technical Governance

## On Project Level

- Each OpenStack **core project elects its own Project Technical Lead (PTL)** and enjoys a level of independence, especially around
  - Milestone planning, feature definition and delivery.
- Each project coordinates with the **release manager** to ensure a smooth coordinated framework-level release every 6 month
- Each of the elected PTLs will hold seats on the OpenStack Project Policy Board

## On Framework Level

- The **Project Policy Board (PPB)** has a mandate to review projects that wish to be included as official OpenStack projects

# OpenStack Technical Governance

## The Project Policy Board

### Membership

The Board consists of a mixture of elected and appointed members. Current members are

Jesse Andrews (anotherjesse)(Rackspace)	Appointed
Jonathan Bryce (jbryce)(Rackspace)	Appointed
Devin Carlen (devcamcar)(Nebula)	Dashboard PTL - Term ends Fall 2012
Thierry Carrez (ttx)(Rackspace)	Elected - Term ends Spring 2013
John Dickinson (notmyname)(SwiftStack)	Swift PTL - Term ends Fall 2012
Joe Heck (heckj)("Nebula")	Keystone PTL - Term ends Fall 2012
Vish Ishaya (vishy)(Rackspace)	Nova PTL - Term ends Fall 2012
Josh Kearney (jk0)(Piston Cloud)	Elected - Term ends Fall 2012
Joshua McKenty (jmckenty)(Piston Cloud)	Appointed
Ewan Mellor (ewanmellor)(Citrix)	Elected - Term ends Fall 2012
Jay Pipes (jaypipes)(AT&T)	Elected - Term ends Spring 2013
John Purrier (johnpur)(AppFog)	Appointed
Paul Voccio (pvo)(Rackspace)	Elected - Term ends Fall 2012
Brian Waldon (bcwaldon)(Rackspace)	Glance PTL - Term ends Fall 2012
Dan Wendlandt (danwent)(Nicira)	Quantum PTL - Term ends Fall 2012

PTL – Project Technical Lead

### Activity

Proposals can be submitted to the committee for consideration on the wiki: <http://wiki.openstack.org/Governance/Proposed/>

Approved proposals can be viewed in the wiki as well: <http://wiki.openstack.org/Governance/Approved>

### Meetings

Next meeting: 2012-08-07 20:00:00 UTC/3:00 PM CST #openstack-meeting on freenode

- The PPB has the following primary responsibilities:
  - Definition and ownership of the OpenStack mission and vision.
  - Coordination and alignment across OpenStack projects
  - Adding projects both to the incubation program and to the core set of projects, assuring compatibility with OpenStack's mission.
  - Ensuring inter-project architectural consistency and coherent API definition.
- The PPB is **not tasked with overseeing the architectural or other technical decisions of the individual projects**

# OpenStack Code Contribution

## How to Contribute

- Sign the **Contributor agreement**
  - “Everyone” signs Individual Contributor License agreement. (also if covered by a Corporate Contributor License Agreement)
  - **Grant of Copyright License**. Grants to the Project Manager and to recipients of software distributed by the Project Manager a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, sublicense, and distribute Your Contributions and such derivative works.
  - **Grant of Patent License**. Grants the Project Manager and to recipients of software distributed by the Project Manager a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license

# OpenStack Code Contribution

## How to Contribute

- Sign the **Contributor agreement**
  - Copyright and Patent Licenses
- **Design Tenets**
  - Mandatory set of tenets
- **Coding Standards**
  - Mandatory coding standards
- **Explanation of the Release cycle**
  - Official release cycles
- **Submitting Code (Gerrit Workflow)**
  - Code is submitted into branches and will be reviewed



# OpenStack Code Contribution

## Submitting Code (Gerrit Workflow)

- Code is submitted into separate “topic branches” (Git)
- Once the code is committed, it appears at <https://review.openstack.org>
- **Automatic testing** will be done and the results will be displayed once they are complete
- **Reviewers will come and review** and leave comments in the comment box or in the code itself

# OpenStack Code Contribution



**All** Documentation  
Open Merged Abandoned

Search for status:open

ID	Subject	Owner	Project
I f788b94a	Update requires to glanceclient >=0.5.0	Vish Ishaya	openstack/nova
Ia490de8e	Add lib/template	Dean Troyer	openstack-dev/devstack
I376d2cdb	hacking: Add driver prefix recommendation.	Rick Harris	openstack/nova
I1047489d	Stop using scheduler RPC API magic	Mark McLoughlin	openstack/nova
Ib2e2504a	Make libvirt use the new network model datastructures	ijw-ubuntu	openstack/nova
I82c679f4	Sort API extensions by alias.	Dan Prince	openstack/nova
I45d94cb7	Upating proxy-server StatsD logging.	Darrell Bishop	openstack/swift
Ic01e47d4	Fixes bug 1039065	tom-gall	openstack/nova
Id2e02522	Add XML support for test_attach_volume	Dan Smith	openstack/tempest
If801ae23	Add XML support for test_security_groups.py	Dan Smith	openstack/tempest
I510ab397	Use PATCH instead of PUT for v2 image modification	Mark Washenberger	openstack/glance
I3908e374	Implements agent for Quantum Networking testing	Nachi Ueno	openstack/quantum
Ibc7e9b80	Implements PowerVM get_available_resource method.	Tiago Mello	openstack/nova
Iaf372f3a	Set glance authtoken in config, not paste	Brian Waldon	openstack-dev/devstack
Ibda f8b2e	Move authtoken config out of paste	Brian Waldon	openstack/glance
I849737c6	WARN and use defaults when no policy file is found	Brian Waldon	openstack/glance
Id06692a1	Support for several HA RabbitMQ servers.	Eugene Kirpichov	openstack/openstack-common
I7114a0a7	initial implementation of blueprint object-append	Constantine Peresyphkin	openstack/swift
I90f015ad	Adds registry logging	brian-rosmaita	openstack/glance
Idbf31a23	Can run swift-bench across multiple cores/servers.	Darrell Bishop	openstack/swift
Ib702114d	Create .mailmap file	Zhongyue Luo	openstack/quantum
I80f0ee55	Expand image_create db test	Brian Waldon	openstack/glance
Idb2b8525	Raise Forbidden exception in image_get	Brian Waldon	openstack/glance
Ic35afaa8	PEP8 fix	Dolph Mathews	openstack/keystone
Ieab82937	Adds notifications for images v2	iccha-sethi	openstack/glance

# OpenStack Framework Governance

In 2011, Rackspace announced that it would be transitioning management of OpenStack to an independent foundation structure.

- The **OpenStack Foundation**

## Tentative schedule

- » Post Draft of Foundation Mission to wiki: Jan 5th, 2012
- » Discussion of Foundation Mission Draft: Jan 5th-Jan 22nd
  - » Mailing list discussion
  - » Webinar to gather additional feedback (details to be posted on mailing list, blog, and twitter)
- » Post Revised Foundation Mission: Week of ~~January 23rd~~ January 30th
- » Post Draft of Structure: Week of ~~January 30th~~ February 6th
- » Discussion of Structure Draft: February
  - » Mailing List Discussion
  - » In person meetup in Sunnyvale, February 15 at 4:30 PM
- » Revision of Structure Draft: March 6th
- » Webinar to gather additional feedback (details to be posted on mailing list, blog, and twitter): March 13th & 14th
- » Revision of Structure Draft; Framework Agreement published: March 16th
- » Finalize initial Strategic Members and Drafting Committee: April 5th
- » Drafting committee publishes drafts and revisions: [April, May, & June](#)
- » Publish final structure: July 6th\*
- » Membership targets met to ratify documents: August 2012\*
- » Operations of Foundation begin after 60-day transition period: August 2012\* + 60 days

# OpenStack Framework Governance

## OpenStack in Foundation World

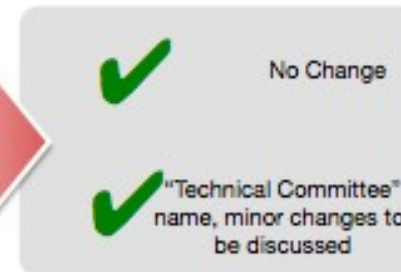
### Today

Technical governance

- ▶ **Elected Project Technical Leads (PTLs)** make project-level decisions.
- ▶ **Project Policy Board** oversees entire set of OpenStack projects (PPB)

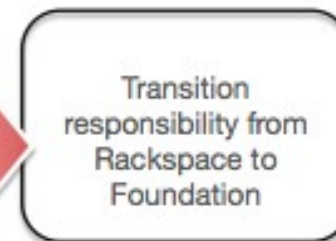


### Foundation World



Project management, legal oversight, etc

- ▶ **Rackspace "project manages"** including community management, release management, marketing, PR, and event management. Rackspace also **owns the trademark**, and is **responsible for overall Governance policy**.



### Foundation Planning Goals

1. Preserve working processes & commitment to meritocracy
2. Create entity with responsibility for role Rackspace has played



# OpenStack Framework Governance

The Technical Committee ("TC") succeeds the PPB and possess enhanced authority

- Is tasked with **providing the technical leadership for OpenStack as a whole** (all official projects, as defined below).
- Enforces OpenStack ideals (Openness, Transparency, Commonality, Integration, Quality...)
- Decides on issues affecting multiple projects, **forms an ultimate appeals board for technical decisions**
- **TC generally not involved in project-internal decisions, but has oversight over project-specific decisions**, especially when they affect other projects or go contrary to general OpenStack project goals.

Project Technical Leads ("PTL")

- Own a seat in the TC
- Manage day-to-day operations, drive the project goals and resolve technical disputes within their project.
- However **if a given debate cannot be clearly resolved, the PTL can decide the outcome.**

# OpenStack Framework Governance

TC members must be OpenStack Foundation individual members

- Individual Members
  - participate on their own
  - as part of their paid employment.
- Have the right to run for, and vote for, a number of leadership positions.

Characteristics of Individual Members:

- Contribute to OpenStack in a variety of ways such as code, documentation, translations, bug reports, testing, project infrastructure, advocacy, marketing, community management, legal guidance
- Elect representatives to Board, Technical Committee and PTL positions

# OpenStack Framework Governance

## TC Members

- The TC is composed of the elected PTLs, plus 5 directly-elected members
- Partially renewed using elections every 6 months
- All **TC members must be OpenStack Foundation individual members**

## TC Chair

- After the TC proposes one of its members to act as the TC chair
- The **Board of Directors** has the authority to approve the TC chair and shall approve the proposition, unless otherwise justified by its bylaws.
- The TC chair is responsible for
  - Making sure meetings are held according to the rules
  - Communicating decisions taken during meetings to the
    - Board of Directors
    - The OpenStack community at large

# OpenStack Framework Governance

## The **Board of Directors**

- The Board shall not exceed twenty-four members.
  - **Platinum Members** appoint 1/3 of the seats
    - Each Platinum member one
  - **Gold Members** elect 1/3 of the seats
    - Based on consensus
  - **Individual Members** elect 1/3 of the seats
    - Based on consensus
- Oversees Foundation legal and financial aspects, sets overall budget and goals for Foundation staff, and hires the **Executive Director**.
- **Approve the TC Chair** (technical governance)
- Key policies require a 70% supermajority for changes (e.g. Trademark Policy, Governance Structure).
- Changes to the Bylaws, including member rights, would require approval by a vote of the Members of the Foundation



# OpenStack Framework Governance

## Foundation Bylaws:

### ARTICLE IV. BOARD OF DIRECTORS

#### 4.1 General Powers.

(a) The **business and affairs of the Foundation shall be managed by or under the direction of a Board of Directors**, who may exercise all of the powers of the Foundation except as otherwise provided by these Bylaws.

(b) The management of the **technical matters relating to the OpenStack Project shall be managed by the Technical Committee**. The management of the technical matters for the OpenStack Project is designed to be a technical meritocracy.

#### 4.13 Technical Committee.

(b) The Technical Committee shall have the authority to determine the modules for addition, combination, split or deletion from the OpenStack Project except for modules of the Core OpenStack Project. **For modules of the Core OpenStack Project, the Technical Committee may recommend to the Board of Directors the modules for addition, combination, split or deletion from the Core OpenStack Project.**

- **[Ed.] This means that ultimate power with respect to overall scope (not technical detail) of OpenStack is with the BoD**

# OpenStack Framework Governance

## What is the OpenStack Core Project?

### Foundation Bylaws:

#### ARTICLE IV. BOARD OF DIRECTORS

The management of the technical matters for the OpenStack Project is designed to be a technical meritocracy.

The “OpenStack Project” shall consist of a “Core OpenStack Project,” library projects, gating projects and supporting projects. .

The **Core OpenStack Project** means the software modules which **are part of an integrated release and for which an OpenStack trademark may be used.**

On formation of the Foundation, **the Core OpenStack Project is the Block Storage, Compute, Dashboard, Identity Service, Image Service, Networking, and Object Storage** modules.

# OpenStack Framework Governance

## Platinum Members

- **Class A** Platinum Members are Canonical, Ltd., IBM, Nebula, Inc., and Red Hat, Inc.
- **Class B** Platinum Members are AT&T Inc., Hewlett Packard Company, Rackspace US, Inc., and Suse
- Platinum Members will
  - Fund \$500,000 per year (paid annually), three year commitment
  - Provide operational resources such as staffing or development infrastructure

## Gold Members

- Term for the Initial Gold Members shall begin on the COI Effective Date and terminate on December 31, 2013.
- Gold Members will
  - Fund an amount equal to total company revenue times .025%, with a minimum of \$50k and a maximum of \$200k.

# OpenStack License Agreement

## ARTICLE VII. INTELLECTUAL PROPERTY POLICY

### 7.1 Licenses and Contribution Agreements for Software.

(a) The Foundation shall generally accept contributions of software made pursuant to the terms of the Contributor License Agreements.

The **Board of Directors may adopt additional contributor license agreements** as may be appropriate for certain organizations or contributions to secure a license on terms **which will permit distribution under the Apache License 2.0**, and may require inclusion of the Apache License 2.0 license header in code contributions.

(b) The Foundation shall distribute the software in the OpenStack Project under the Apache License 2.0 unless changed as provided in Section 9.1

# Appendix