



# Building a Cloud Computing Platform based on Open Source Software

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# Topics

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I. Open Source SW and Cloud Computing

II. About OpenStack

III. Project Details

IV. OpenStack Korea Community

V. KT Case study of OpenStack

# Open Source Software and Cloud Computing

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## □ Benefits of Open Source Software in Cloud Computing

- Openness and Compatibility
- Flexible Technology
- No or low costs
- Reduce Vendor Lock-in

## □ Open source software for cloud computing

- Eucalyptus
- Opennebula
- CloudStack

## □ Consideration

- Costs
- Open Standard
- Vendor Lock-in
- Continuity and Possibility for growth

# What is OpenStack ?

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A community creating open source software  
to build public and private clouds



# What is OpenStack ?

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## OpenStack Mission

“To produce the **ubiquitous** open source cloud computing platform that will meet the needs of public and private cloud providers regardless of size, by being **simple to implement** and **massively scalable**.”



# What is OpenStack ?

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## □ Open source software for building private and public clouds

- Rackspace Hosting and NASA jointly launched (July 2010)
  - NASA : contribute initial codes of Compute project (NASA' s [Nebula](#) Platform)
  - Rackspace : contribute initial codes of Object Storage project (Rackspace' s [Cloud Files](#) platform)
- Community : 1556 People / 116 Companies (Oct. 5. 2011.)
  - Rackspace, NASA, Citrix, DELL, NTT, NTT Data, Cloud.com, Opscode, Rightscale, Anso Labs, Enstratus, Cloudscaling, AMD, Intel, Cisco, Cirrascale, Arista, ... and KT, FLK(FeelingK)
- Apache 2.0 License

## □ URLs for Informations

- [openstack.org](http://openstack.org) : main Community site
- [wiki.openstack.org](http://wiki.openstack.org) : Sharing Technical Details  
( Installation Guide, Documents, Q&A, ... )
- [openstack.or.kr](http://openstack.or.kr) : OpenStack Korea Community
  - Korean Installation/Testing Guide, Sharing hands on experiences, Open Source Cloud Information, and Knowhow

# What is OpenStack ?

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## □ Main Projects

- Compute (code-named “Nova” )

- open source software and standards for large-scale deployments of automatically provisioned virtual compute instances.

- Object Storage (code-named “Swift” )

- open source software and standards for large-scale, redundant storage of static objects

- Image Service (code-named “Glance” )

- provides discovery, registration, and delivery services for virtual disk images.

# Why OpenStack ?

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## ●Control and Flexibility

No Vendor lock-in. Multiple hypervisors support. Modular design can integrate with legacy or third-party technologies to meet your business needs.

## ●Industry Standard

More than 100 leading companies from over a dozen countries are participating in OpenStack, called like a linux in the cloud systems.

## ●Proven Software

Running the OpenStack cloud operating system means running the same software that today powers some of the largest public and private clouds in the world.

## ●Compatible and Connected

Compatibility with public OpenStack clouds means enterprises are prepared for the future-making it easy to migrate data and applications to public clouds when conditions are right-based on security policies, economics, and other key business criteria.



# OpenStack Release History

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□Austing : 21 Oct. 2010

□Bexar : 3 Feb. 2011

□Cactus : 15 Apr. 2011

□Diablo : 22 Sep. 2011

➔ successful for private cloud Platform  
and experimental Public Cloud...

□Essex : 5 Apr. 2012

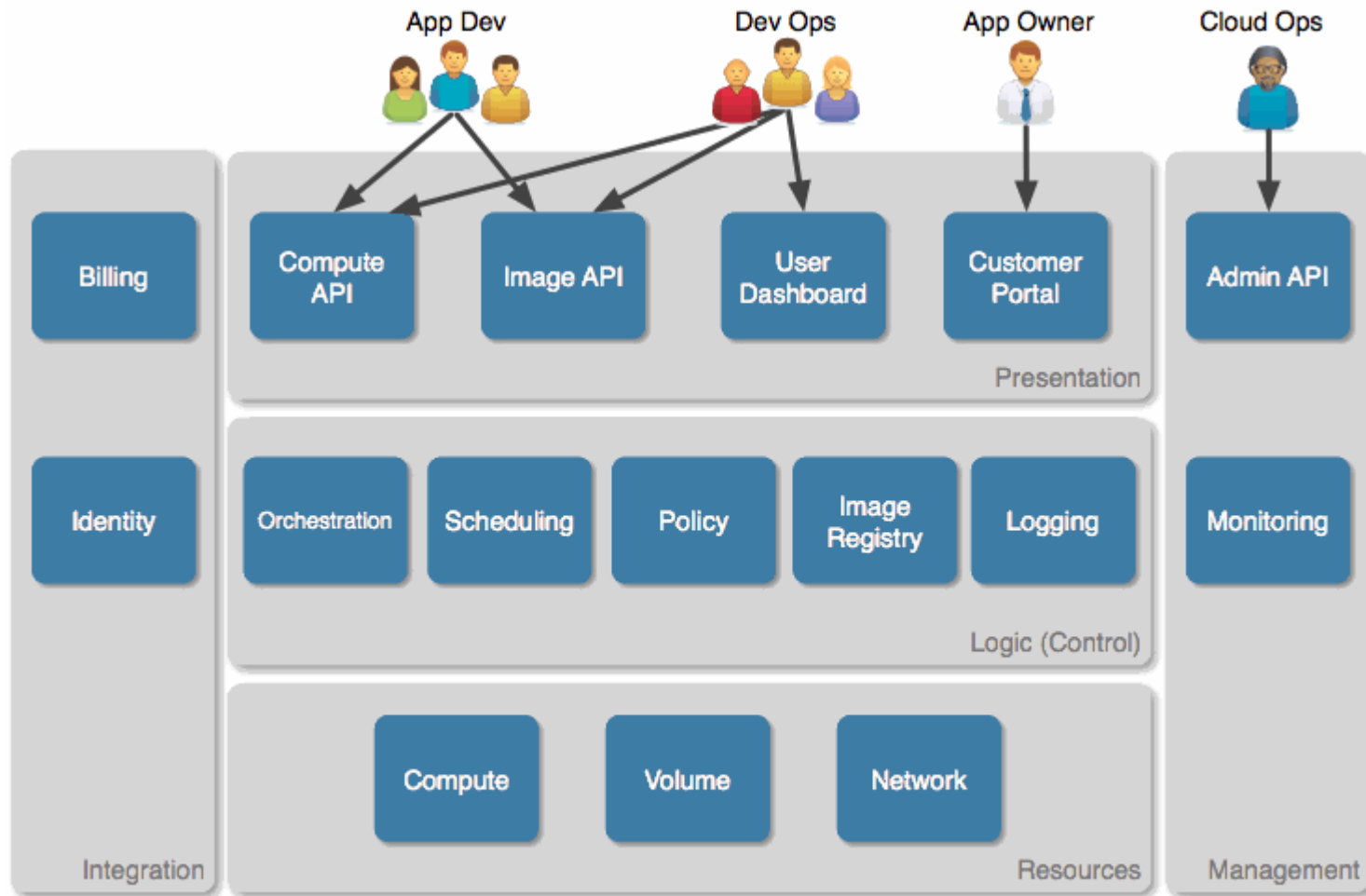
➔ expected to be a production Level of public cloud platform

# OpenStack Compute (Nova)

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- OpenStack Compute Subproject : Codename “NOVA”
  - Cloud fabric controller
  - Standard cloud operating system for controlling Infrastructure as a Service(IaaS) cloud systems
  - Amazon EC2, Rackspace Cloud Servers, Eucalyptus, OpenNebula are all of the same kind
  - Users and Projects units for managing
  - It has not hypervisors, but provides web-based API for applying it
- **Features**
  - REST-based API
  - No hardware dependency: low cost using the commodity hardware
  - Multiple Hypervisors : KVM, Xen, XenServer, UML, Hyper-V, Vmware vSphere, LXC
  - Asynchronous eventually consistent communication
  - Horizontally and Massively Scalable
  - Amazon EC2 compatible API and OpenStack API

# OpenStack Compute (Nova) Architecture

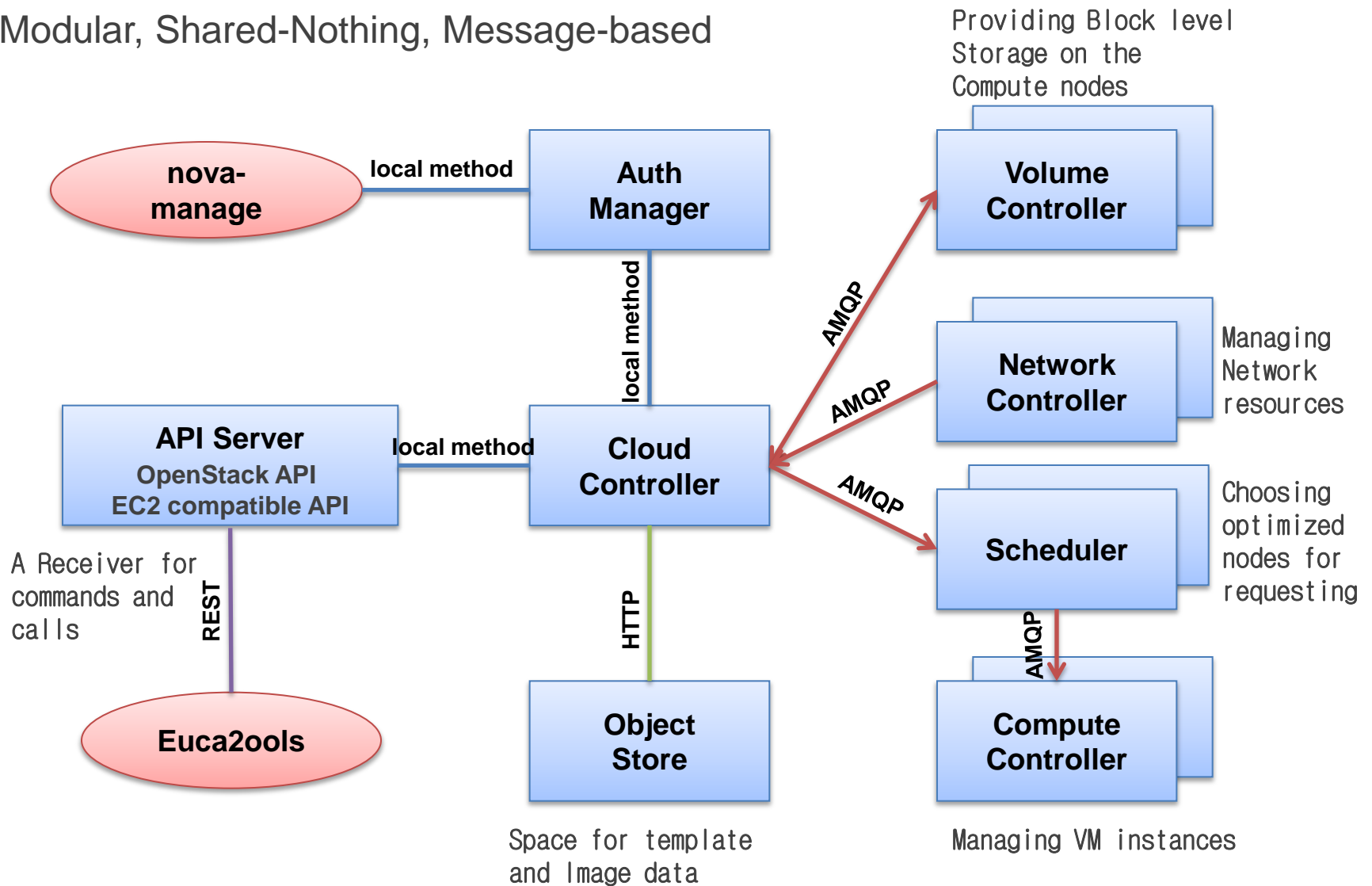


<http://ken.pepple.info>

□ <http://ken.pepple.info/openstack/2011/04/22/openstack-nova-architecture/>

# Nova Core Modules

- Modular, Shared-Nothing, Message-based



# Project Details

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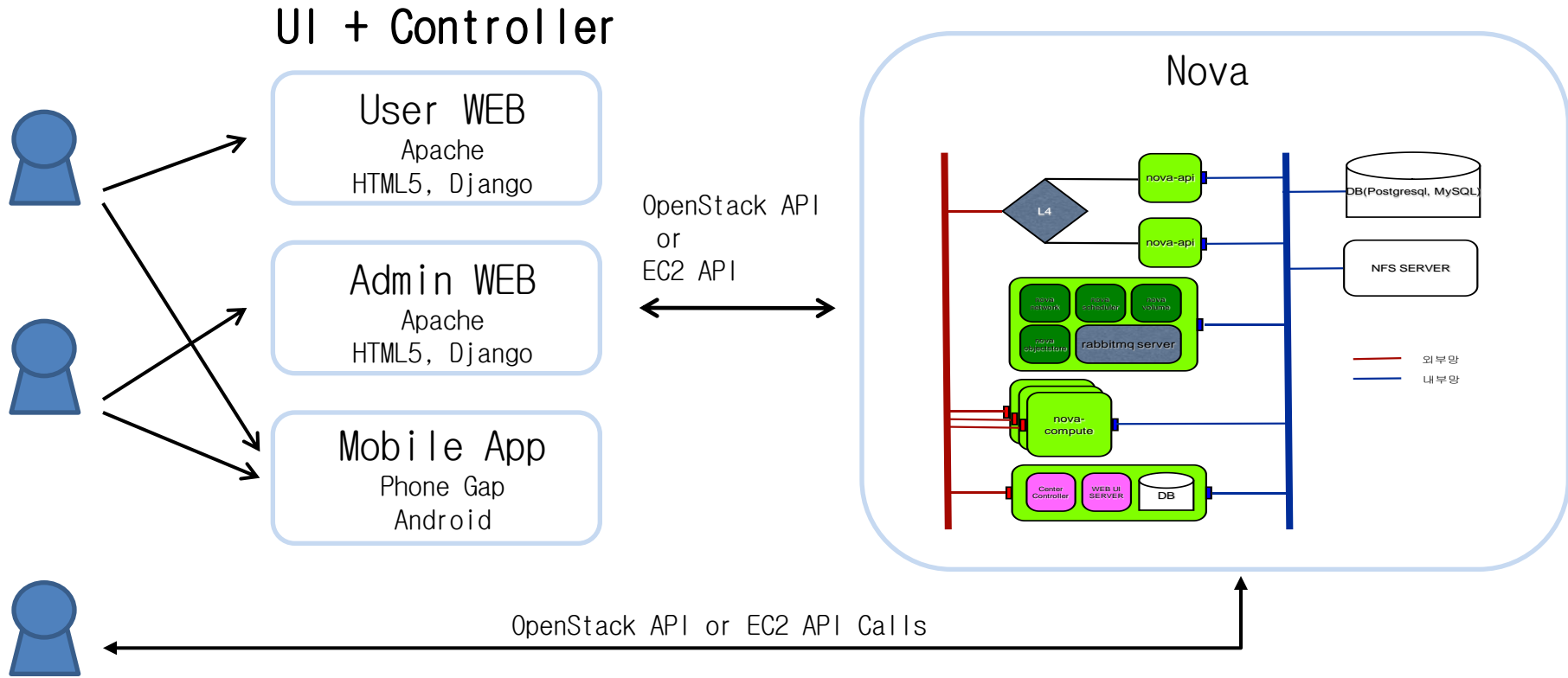
## □ Project Overview

- Project Name: IaaS cloud management solution based on OpenStack Computing
- Name of Organization: KT corp. / FeelingK corp.
- Num. of People: 14
- Period: 7months (4/25 ~ 11/24)

## □ Project Plans

- Project Goal
  - Developing IaaS cloud solution using OpenStack Compute(Nova) suitable for managing on Web and Mobile
  - Opening the solution and constructing ecosystem by community activities
- Project Features
  - Functions for using multiple hypervisors(KVM, Xen-based)
  - Monitoring functions providing notification and statistic data of H/W and VM resources
  - Functions of central cloud controller for securing massively scalability
  - UI for administrators and developers on Web and Mobile
  - Open APIs providing functions for administrating and managing easily on Web and Mobile devices

# Project Details



## □ Development goals

- OpenStack Version : Diablo release
- Hypervisors: KVM, Opensource Xen, Xen Server
- Multi-Zone management for massively public clouds
- Vlan networks
- Mobile UI: HTML5, python Django Framework, Apppresso

# Project Details

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## □Plans for the output

- Opening the source code of this solution on our community
- Providing an administration guide for constructing private cloud systems using this project

## □Future Plans

- Upgrading to a newer release(Essex version)
- Researching the deployment technologies for massively cloud systems using OpenStack Compute

# OpenStack Korea Community

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## □ Community history

- Opened OpenStack Korea Community on Feb. 2011 with the first official conference
- Attended 25 member companies and over 150 people

## □ Community Activities

- Opening periodical technical seminars for OpenStack
- Sharing the technologies and hands on experiences of OpenStack for installation, management, and tests
- Making the guides for sharing this technologies and experiences
- Collaborating communities and companies related to open source software and Cloud Computing
  - Scheduled new cloud business and conference programs with JCO (the biggest Java community in Korea)
  - Opened seminars with Ubuntu Korea user group as an official member of OSS forum
  - Sharing the technologies of OpenStack with DAUM(The second biggest Internet portal corp. in Korea)
- Offering lectures on OpenStack technologies to universities in Korea, NIPA, ETRI, and so forth

## □ URLs

- [Wiki.openstack.or.kr](http://wiki.openstack.or.kr)
- Facebook ( OpenStack Korea Group )



# KT Case Study of OpenStack

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## □ OpenStack Object Storage (Swift)

- High degree of software maturity for commercial service
- Providing the cloud object storage service in KT using a swift

## □ OpenStack Compute (Nova & Glance)

- Lacking the degree of completion for commercial service
- Expected in the Essex release for the commercial
- Providing IaaS cloud service in KT, but now it is not a Nova
- Preparing to offer IaaS cloud service using a Nova in KT