



Building a Cloud Computing Platform based on Open Source Software

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Topics

I. Open Source SW and Cloud Computing

II. About OpenStack

III. Project Details

IV. OpenStack Korea Community

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Open Source Software and Cloud Computing

□ 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 ?

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



What is OpenStack ?

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 ?

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

What is OpenStack ?

□ 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 ?

●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

□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)

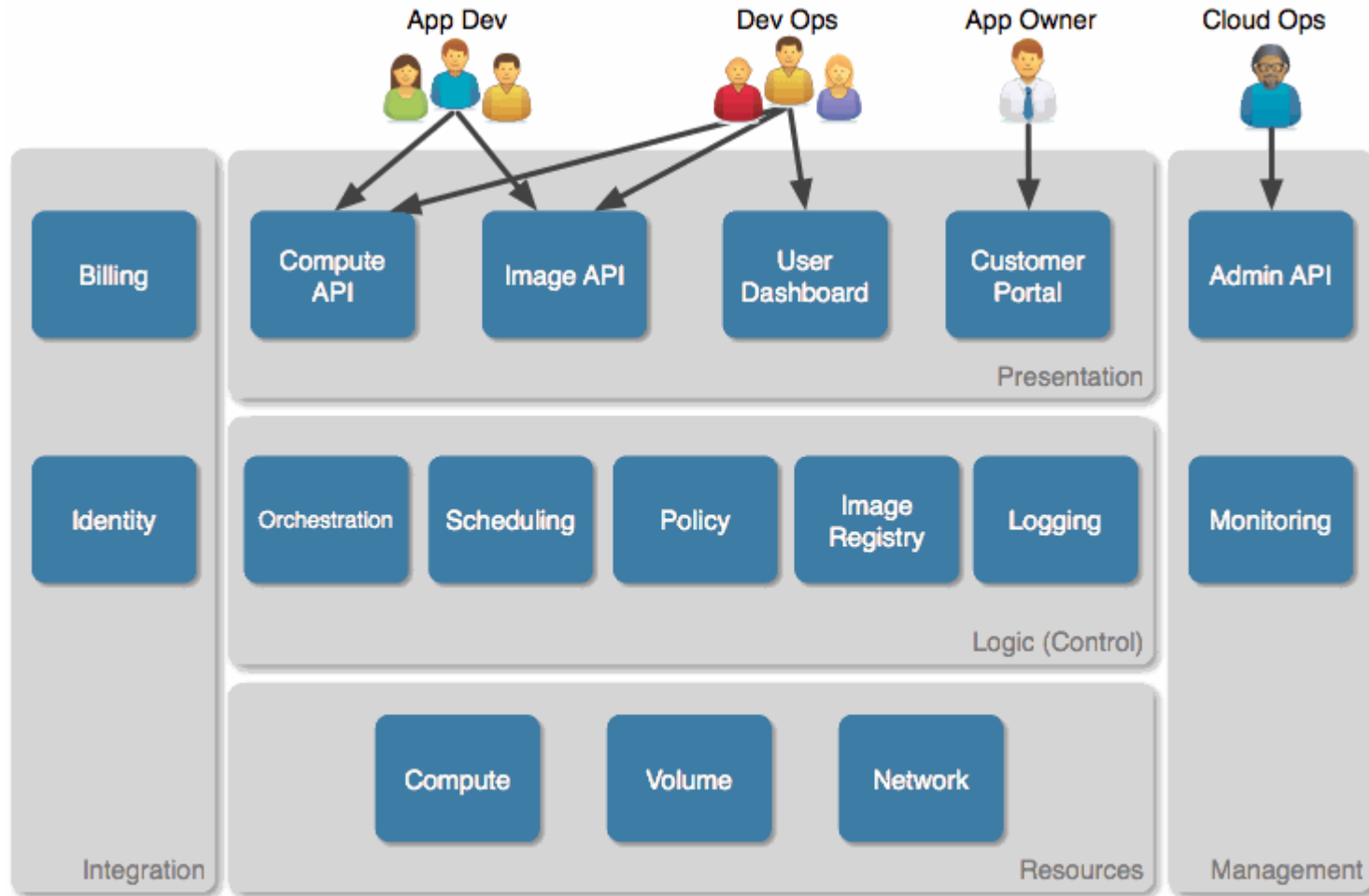
- OpenStack Compute Subproject : Codename “NOVA”

- 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

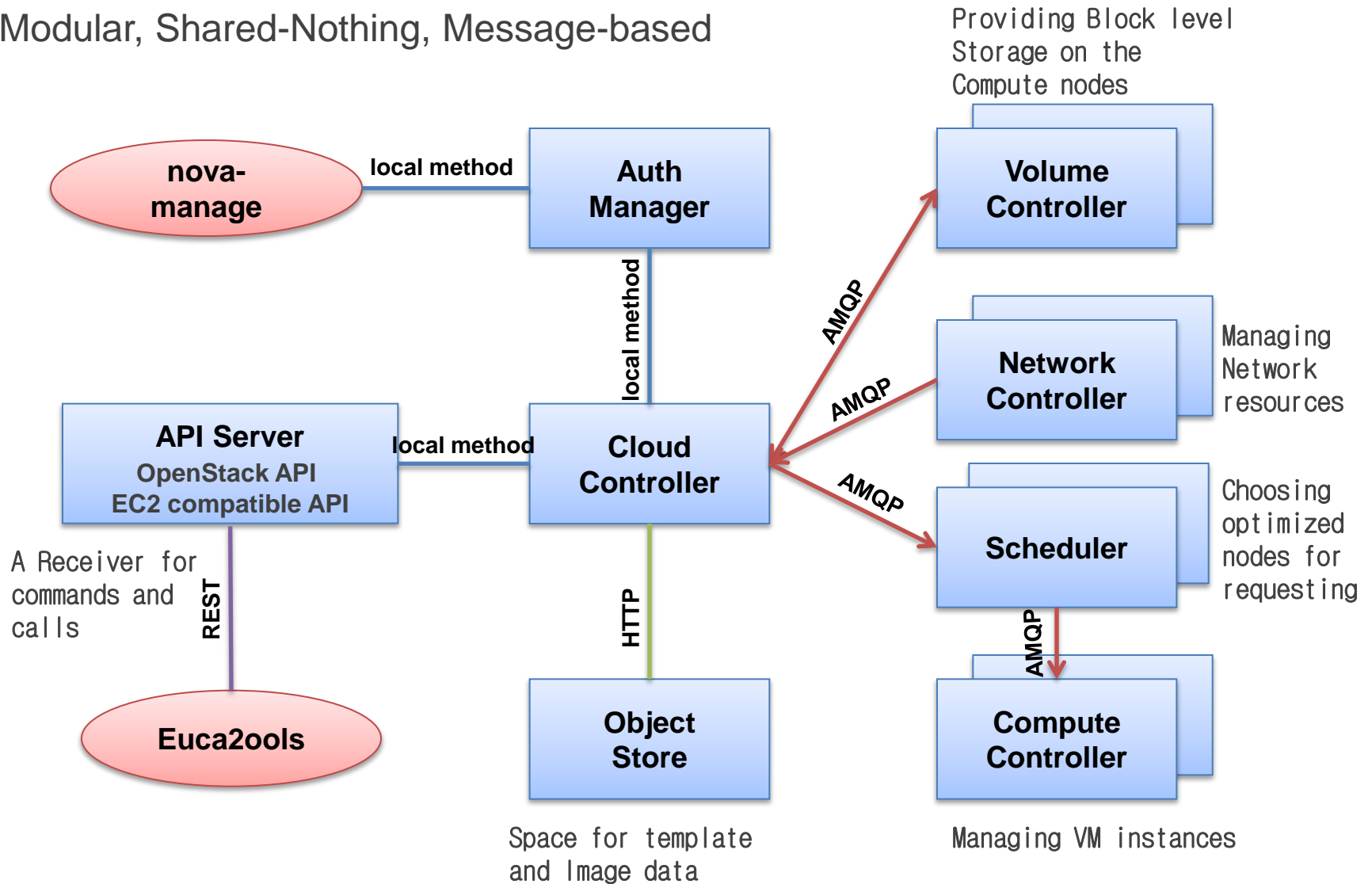


<http://ken.pepple.info>

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

Nova Core Modules

- Modular, Shared-Nothing, Message-based



Project Details

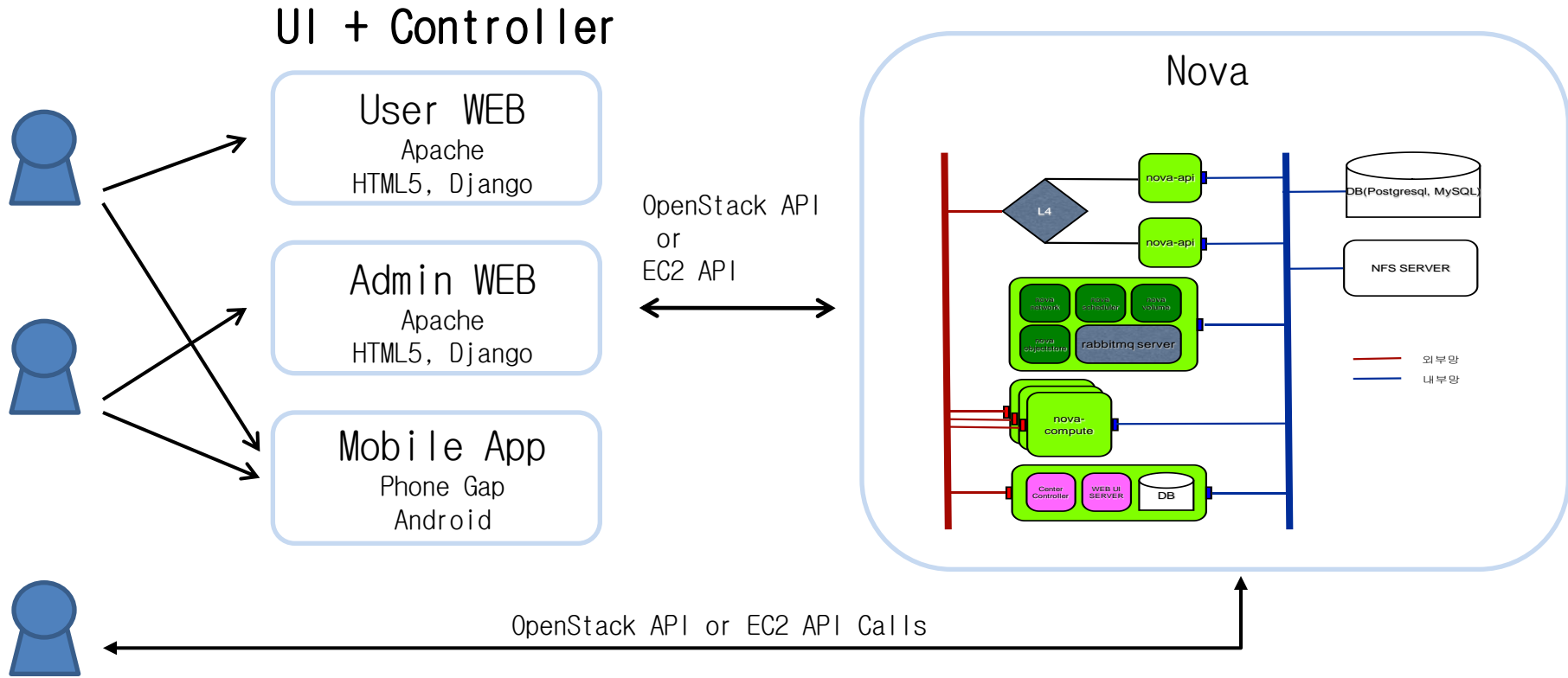
□ Project Overview

- 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

□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

□ 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
- Facebook (OpenStack Korea Group)

KT Case Study of OpenStack

□ 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