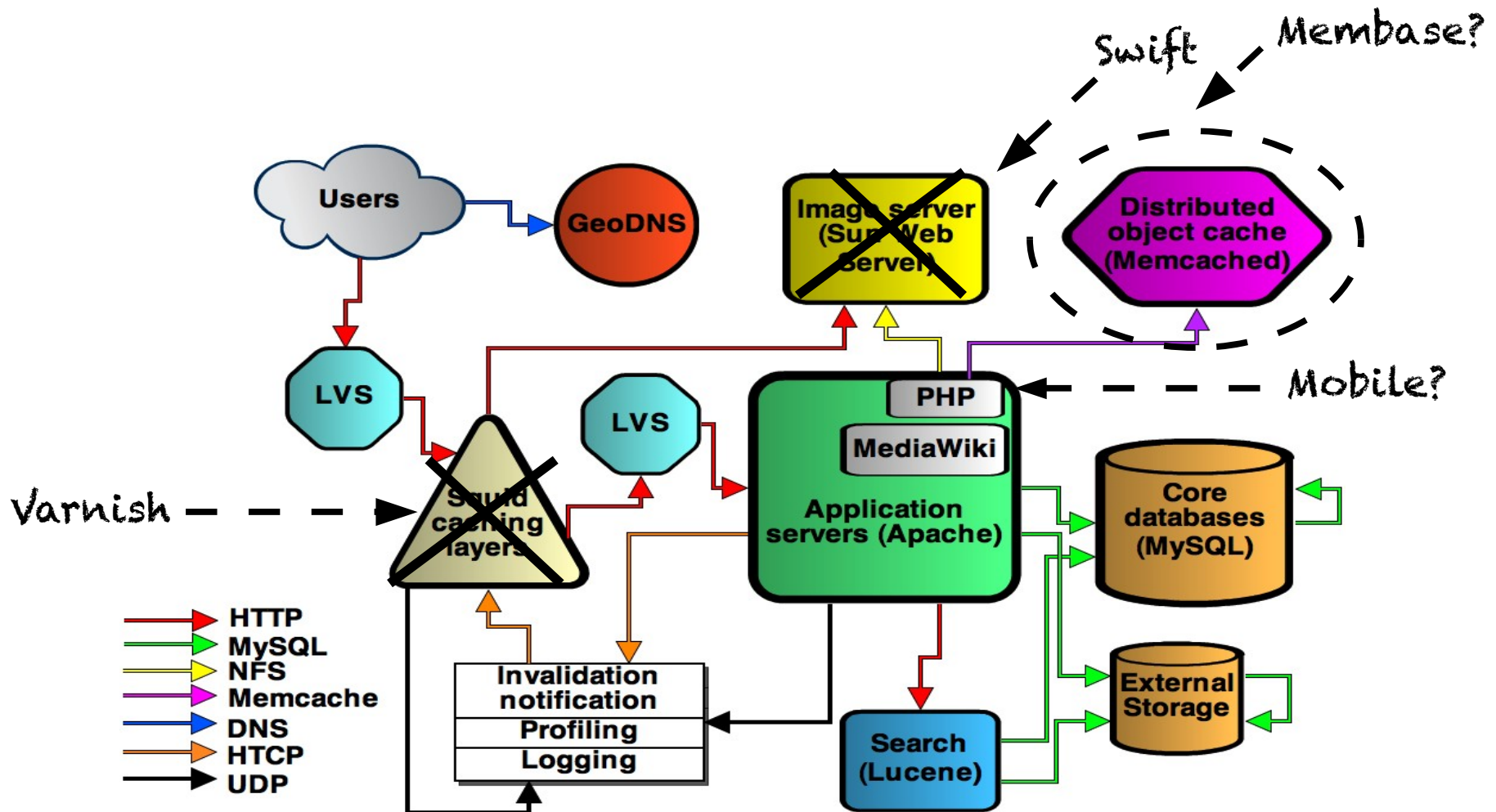


The Site Architecture You Can [Edit](#)

Ryan Lane

Wikimedia Foundation



Content

Editing OpenStack

From Wikipedia, the free encyclopedia

B *I*  [Advanced](#) [Special characters](#) [Help](#) [Cite](#)

`'''OpenStack''' is a IaaS cloud computing project by Rackspace Cloud and NASA joined by several companies such as Cloud.com, Citrix Systems, Dell, enStratus, NTT Data, PEER 1, RightScale, Cloudkick, Zenoss, Limelight, Scalr, Advanced Micro Devices|AMD, Intel Corporation|Intel, Spiceworks, Canonical and Cisco. It is Free software|free open source software released under the terms of the Apache License].`

`[http://openstack.org/projects/compute/ OpenStack Compute \(Nova\) is a cloud computing fabric controller (the main part of an IaaS system). It is written in Python \(programming language\)|Python, using the Eventlet and Twisted \(software\)|Twisted frameworks, and relies on the standard Advanced Message Queuing Protocol|AMQP messaging protocol, and SQLAlchemy for data store access. [http://openstack.org/projects/storage/ OpenStack Object Store \(Swift\) is a massively scalable redundant storage system leveraged in cloud solutions.`

`It will have Open Virtualization Format (OVF) support. It integrates code from NASA's Nebula \(computing platform\)|Nebula platform as well as Rackspace Cloud#Cloud_Files|Rackspace's Cloud Files platform].`

`== History ==`

`In July 2010, Rackspace Hosting and NASA jointly launched a new open source cloud initiative known as OpenStack. The mission of the OpenStack project is to enable any organization to create and offer cloud computing services running on standard hardware. The community's first official release, code-named Austin, was made available just 4 months later with plans to release regular updates of the software every few months.`


Interface

MediaWiki:Common.css

From Wikipedia, the free encyclopedia

This is the [CSS](#) for all skins. Any major changes to this page should first be proposed on its [talk page](#) or the [Village pump](#).

Please note that changes are visible within minutes. Errors you make here can disrupt the entire encyclopedia, so make sure you know what you are doing. Always check with the [W3C CSS Validation Service](#) before and after any changes.

 Testing can be done on your personal [skin.css](#). In [Mozilla Firefox](#) and [Opera](#), you can also test style changes dynamically with the [test styles](#) bookmarklet from squarefree.com. It pops up a window for adding style rules, and updates the page as you type.

If you add or modify anything here, please update the [catalogue of CSS classes](#).


Note: After saving, you have to bypass your browser's cache to see the changes. **Internet Explorer:** hold down the Ctrl key and click the Refresh or Reload button. **Firefox:** hold down the Shift key while clicking Reload (or press Ctrl-Shift-R). **Google Chrome** and **Safari** users can just click the Reload button. For details and instructions about other browsers, see [Wikipedia:Bypass your cache](#).

```
/* Main page fixes */
#interwiki-completelist {
    font-weight: bold;
}
```

MediaWiki:Common.js

From Wikipedia, the free encyclopedia

This is [JavaScript](#) for all users. Any changes to this page should first be proposed on its [talk page](#) or the [Village pump](#).

 Please note that changes are visible within minutes. Errors you make here can disrupt the entire encyclopedia, so make sure you know what you are doing.

Testing can be done on your personal [vector.js](#).

Note: After saving, you have to bypass your browser's cache to see the changes. **Internet Explorer:** hold down the Ctrl key and click the Refresh or Reload button. **Firefox:** hold down the Shift key while clicking Reload (or press Ctrl-Shift-R). **Google Chrome** and **Safari** users can just click the Reload button. For details and instructions about other browsers, see [Wikipedia:Bypass your cache](#).

```
window.addPortletLink = mw.util.addPortletLink;

/**
 * Redirect User:Name/skin.js and skin.css to the current skin's pages
 * (unless the 'skin' page really exists)
 * @source: http://www.mediawiki.org/wiki/Snippets/Redirect_skin.js
 * @rev: 2
 */
```

Software Development

Page [Discussion](#)

Read

[View source](#)

[View history](#)

Search



How to become a MediaWiki hacker

This article is written to help novice developers learn the skills needed to contribute to MediaWiki development.

If you are an experienced developer, visit the [developer hub](#) instead.

Overview

The MediaWiki software is written in [PHP](#) and uses the [MySQL](#) database. Both have been ported to a variety of operating systems, including, but not limited to, most [Unix](#) variants ([Linux](#), [Mac OS X](#), etc.) and [Microsoft Windows](#). It is possible to install and use MediaWiki on Linux, Mac OS X and Windows. Note: if you do use Windows, certain features involving external utilities will be unavailable, or only available with special downloads and configuration. Operating system dependent bugs are occasionally observed, it is best to have some knowledge of the difference between the various platforms regardless of which operating system you develop on.

The PHP programming language

If you have no knowledge of [PHP](#) (PHP stands for "PHP: Hypertext Preprocessor") but know how to program in other [object-oriented programming](#) languages, have no fear, PHP will be easy for you to learn.

Contents [\[hide\]](#)

[1 Overview](#)

[2 The PHP programming language](#)

[2.1 Related links](#)

[3 Database](#)

[4 Installing MediaWiki](#)

[5 The MediaWiki codebase](#)

[6 Your first feature](#)

[6.1 Testing](#)

[6.2 Turning display_startup_errors on](#)

[7 Posting a patch](#)

[8 See also](#)

Localization

Translatewiki.net is a localisation platform for translation communities, language communities, and free and open source projects.

Start translating

On-line translation

Translate with your web browser anywhere... [Learn more](#)

Many projects

MediaWiki, FreeCol, StatusNet... [More projects](#)

Hundreds of languages

Communities for Arabic, Catalan, Russian, Tamil... [More languages](#)

Assistive technologies

Translation memories, machine translation, message documentation... [Learn more](#)

We are looking for help

Do you know something about PHP, CSS/JS, usability design, documentation writing...

[Join and help us!](#)

We accept new projects

Looking for a platform to localise your project? [Learn more](#)

About us

Who and what are we? [Learn more](#)

Projects using translatewiki.net



MediaWiki

MediaWiki software and extensions



StatusNet

StatusNet software and extensions



FreeCol

a turn-based strategy game



Wikia

MediaWiki extensions used by Wikia



MantisBT

web-based bugtracking system



Pediapress

exporting MediaWiki pages as PDF documents

Architecture Documentation

Main Page

Boxes: [Server roles](#)

Servers: [Apaches](#) | [Squids](#) | [Scalers](#) | [NFS](#) | [DNS](#) | [PowerDNS](#) | [Memcached](#) | [MySQL](#) | [LDAP](#) | [Multicast HTCP purging](#) | [Virtualization](#)

Backups: [CurrentStatus](#) | [Disaster Recovery](#) | [XMLDatabaseDumps](#) | [Offsite](#)

OSs: [Ubuntu](#) [↗](#) | [Automated installation](#) | [Distribution upgrades](#) | [Puppet](#) | [APT repository](#) | [Solaris](#)

Inner: | [Sensors](#) | [console server](#) | [switches](#) | [APC](#) (*remote power strip*) | [Ipmi](#) | [SSL Certificates](#)

War: [Security](#) | [spider blocks](#)

Maps: [batch jobs](#) | [Locations](#) of backups, mirrors, etc. | [Scripts](#)

Email: [Mail](#) | [IMAP](#) | [Mailing lists](#) | [OTRS](#)

Guides: [How-Tos](#) | [Misc scripts](#) | [Wiki farm](#) | [Profiling](#) ([web interface](#) [↗](#)) | [Using the local certificate authority](#)

Network: [Design](#) | [Switches](#) | [BGP](#) | [IPs](#) | [Utils](#) | [802.1Q](#) | [RANCID](#) | [NOC Phones](#) [↗](#)

Other: [Volunteer Squid Sites](#) | [Collected Status](#) | [Platform-specific documentation](#)

- [Bot and monitoring](#)
- [Clusters](#)

Admin logs

Server admin log

March 14

- 19:57 logmsgbot: catrope synchronized php-1.17/extensions/ArticleFeedback/modules/jquery.articleFeedback/jquery.articleFeedback.css 'r83954'
- 19:33 logmsgbot: catrope synchronized php-1.17/extensions/ClickTracking/modules/ext.clickTracking.js 'r83952'
- 19:33 logmsgbot: catrope synchronized php-1.17/extensions/ClickTracking/modules/jquery.clickTracking.js 'r83952'
- 19:28 logmsgbot: catrope synchronized php-1.17/wmf-config/InitialiseSettings.php 'Enable ArticleFeedback on enwiki'
- 19:23 logmsgbot: catrope ran sync-common-all
- 19:22 RoanKattouw: Got sudo weirdness on scap again, running sync-common-all
- 19:21 logmsgbot: catrope synchronizing Wikimedia installation... Revision: 83949:
- 19:20 logmsgbot: catrope synchronized php-1.17/extensions/Collection/Collection.suggest.php 'Syntax error'
- 19:19 RoanKattouw: Running scap to deploy ArticleFeedback (only enabled on test for now, will enable on enwiki after this)
- 18:38 Ryan_Lane: installing sudo schema on nova-controller.tesla and restarting opendj
- 18:14 logmsgbot: catrope synchronized php-1.17/extensions/CodeReview/CodeReview.php 'Style version bump'
- 18:14 logmsgbot: catrope ran sync-common-all
- 18:12 RoanKattouw: Running sync-common-all to deploy r83934
- 09:55 Tim: increased memcached read timeout from 100ms to 500ms. This reduced the read timeout rate from 51/s to 3.4/s.
- 09:50 logmsgbot: tstarling synchronized php-1.17/wmf-config/mc.php 'increasing memcached timeout from 100ms to 500ms while monitoring timeout rate'
- 09:44 logmsgbot: tstarling synchronized php-1.17/wmf-config/InitialiseSettings.php 'log memcached timeout errors'
- 09:40 logmsgbot: tstarling synchronized php-1.17/includes/memcached-client.php 'log timeout errors'

Architecture config files

Here are some Wikimedia configuration files which are not in Subversion. The files are dynamically generated and are perfectly up-to-date.



Apache configuration

- [en2.conf](#)
- [foundation.conf](#)
- [ganglia.conf](#)
- [httpd.conf](#)
- [main.conf](#)
- [nagios.conf](#)
- [nonexistent.conf](#)
- [postrewrites.conf](#)
- [redirects.conf](#)
- [remnant.conf](#)
- [wikimedia.conf](#)
- [www.wikipedia.conf](#)



MediaWiki configuration

- [abusefilter.php](#) ([raw text](#))
- [CommonSettings.php](#) ([raw text](#))

Monitoring

Current status Wikimedia Foundation - Core services



Current Performance and Availability Status

Mar 14, 2011 22:43 UTC

Service / Website	Performance and Availability Status	Current Performance	Uptime Last 24h
API	Service is operating normally	741 ms	100.0%
DNS	Service is operating normally	257 ms	100.0%
Dumps download	Service is operating normally	834 ms	100.0%
GeoIP lookup	Service is operating normally	149 ms	100.0%



WIKIMEDIA

Search

Quick Search:

Find on Wikitech:

Current Status

- Tactical Overview
- Map
- Hosts
- Services
- Host Groups

Current Network Status
 Last Updated: Mon Mar 14 22:46:08 UTC 2011
 Updated every 90 seconds
 Nagios® 3.1.2 - www.nagios.org
 Logged in as guest

- [View History For all hosts](#)
- [View Notifications For All Hosts](#)
- [View Host Status Detail For All Hosts](#)

Display Filters:

Host Status: Pending | Up
 Types:
 Host Properties: Any
 Service Status: All Problems
 Types:
 Service: Not In Scheduled Downtime & Has Not Been Acknowledged &
 Properties: Active Checks Enabled

Up	Down	Unreachable	Pending
399	18	0	0

All Problems	All Types
18	417

Ok	Warning	Unknown	Critical	Pending
1953	1	0	53	0

All Problems	All Types
54	2007

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
db10	Misc_Db_Slave	CRITICAL	03-14-2011 22:45:00	109d 22h 34m 26s	3/3	CRITICAL: Read only: expected ON, got OFF
db22	RAID	CRITICAL	03-14-2011 22:45:11	53d 20h 56m 20s	3/3	CRITICAL: Defunct disk drive count: 1
db30	RAID	CRITICAL	03-14-2011 22:45:11	107d 22h 37m 41s	3/3	CRITICAL: logical devices: 1 defunct

Performance Statistics



Wikimedia Cloud Report for Mon, 14 Mar 2011 22:41:35 +0000

Get Fresh

Last Sorted

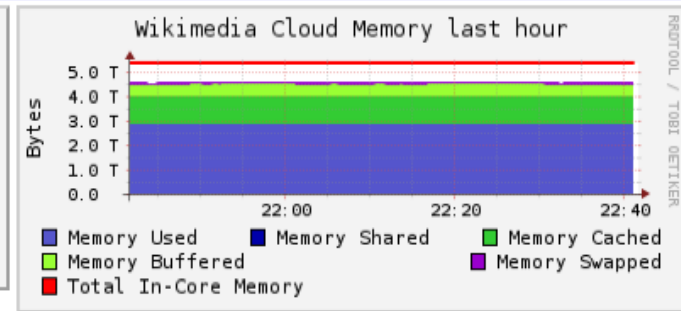
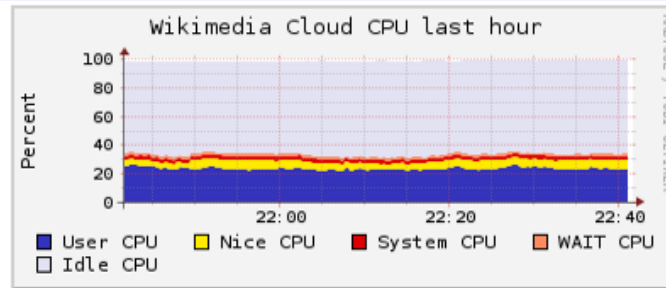
WIKIMEDIA
Wikimedia Cloud >

Wikimedia Cloud (17 sources) [\(tree view\)](#)

CPU's Total: **2422**
Hosts up: **379**
Hosts down: **0**

Avg Load (15, 5, 1m):
50%, 51%, 50%

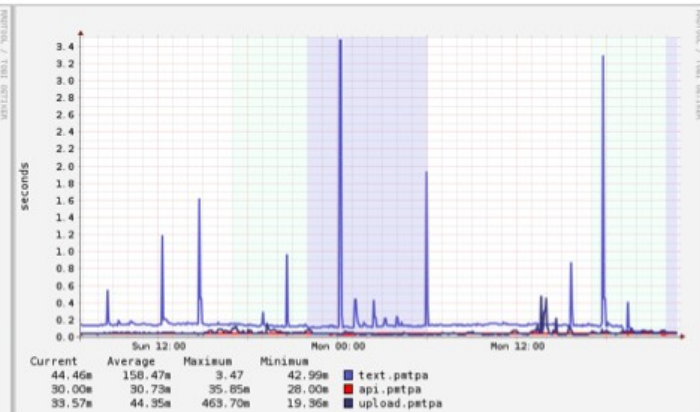
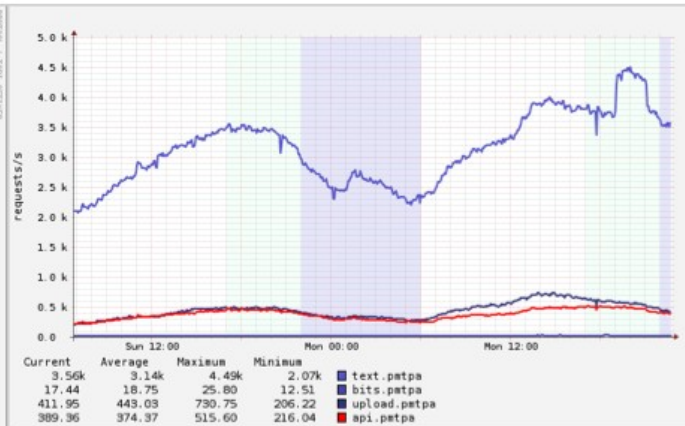
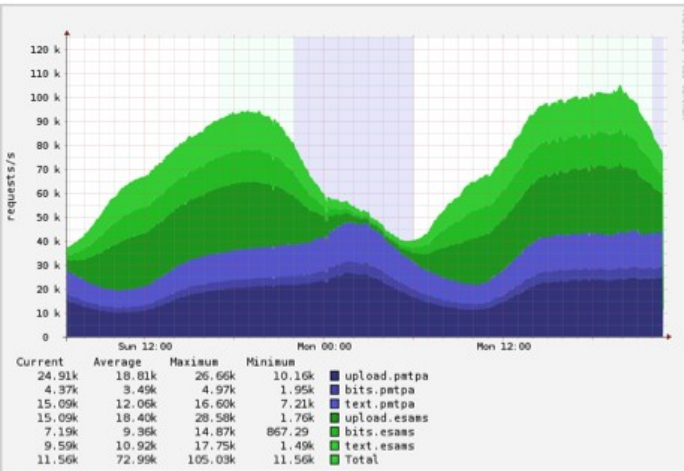
Localtime:
2011-03-14 22:41



Wikimedia Foundation Wikimedia Content Delivery Network

[Top | Up]

Leaf nodes:

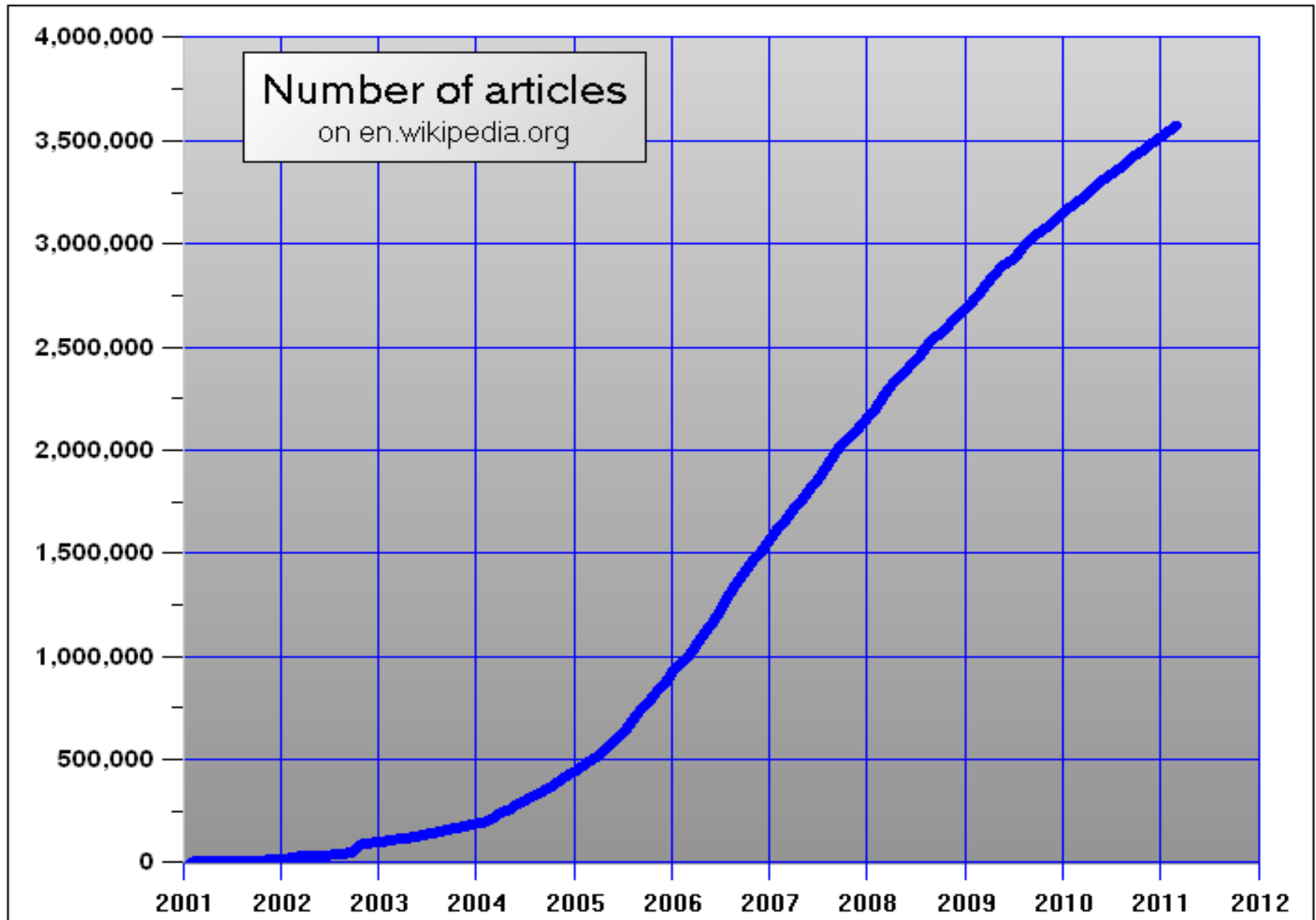


[Default view]

Philosophy: Community Empowerment



Empowerment and Growth



Early Community: No staff

**Current Ops Situation:
No new non-staff**

**Current Dev Situation:
Minimal staff and
community project
collaboration**

OpenStack: An Empowerment Technology

Community Oriented Test and Development

Goals

- Improved staff and volunteer collaboration
- Privilege escalation for non-ops
- Environment for testing major changes

How to achieve these goals

- Build a production cluster clone
- Allow liberal access to the clone
- Provide a way to add new architecture without affecting clone
- Provide a way to make changes without root
- Provide a way to migrate changes to production

Basic use case

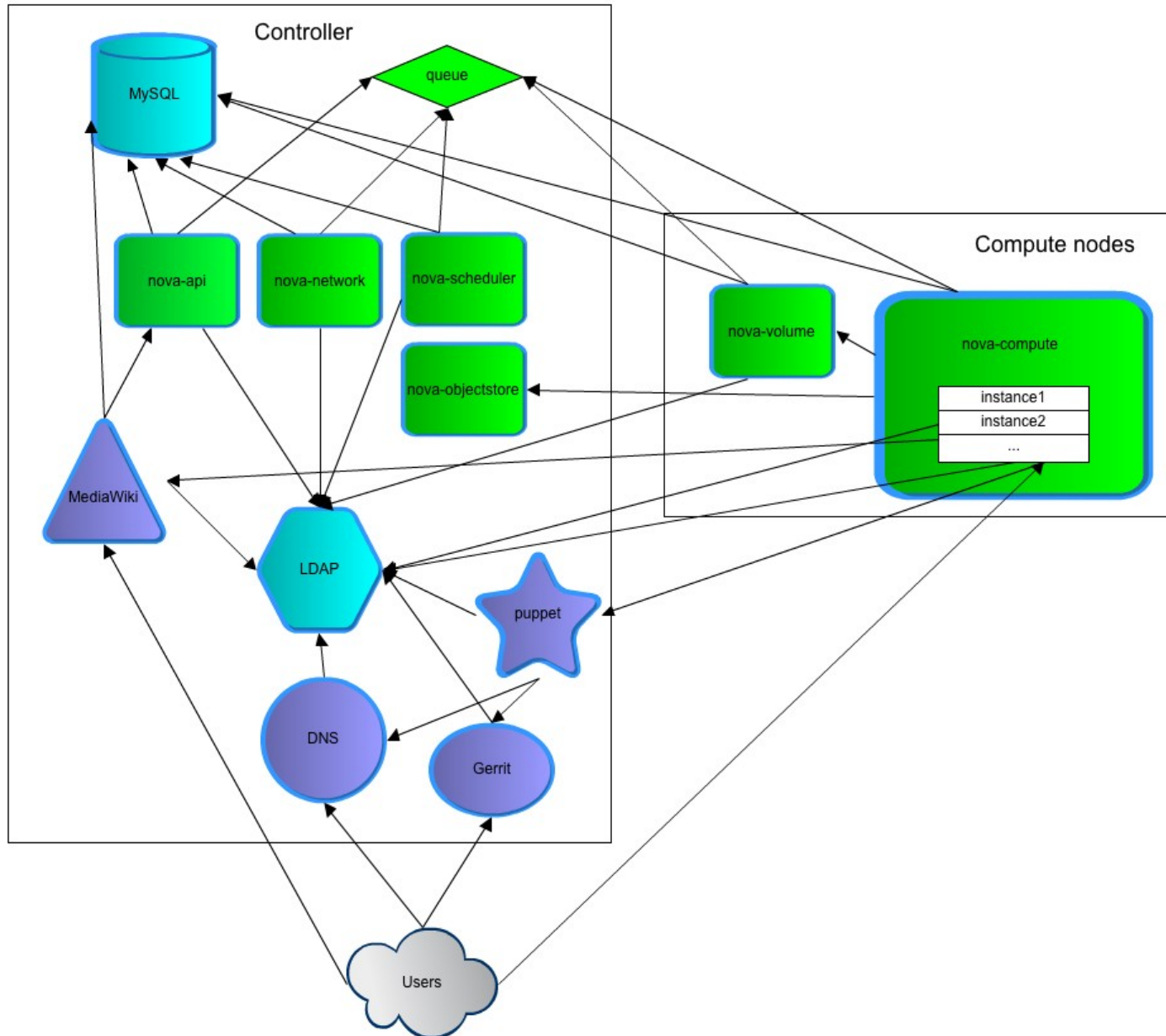
- Ops makes initial default project
 - Clone of production cluster
 - Move puppet configuration to git repo
 - Production and test/dev branches

Basic use case

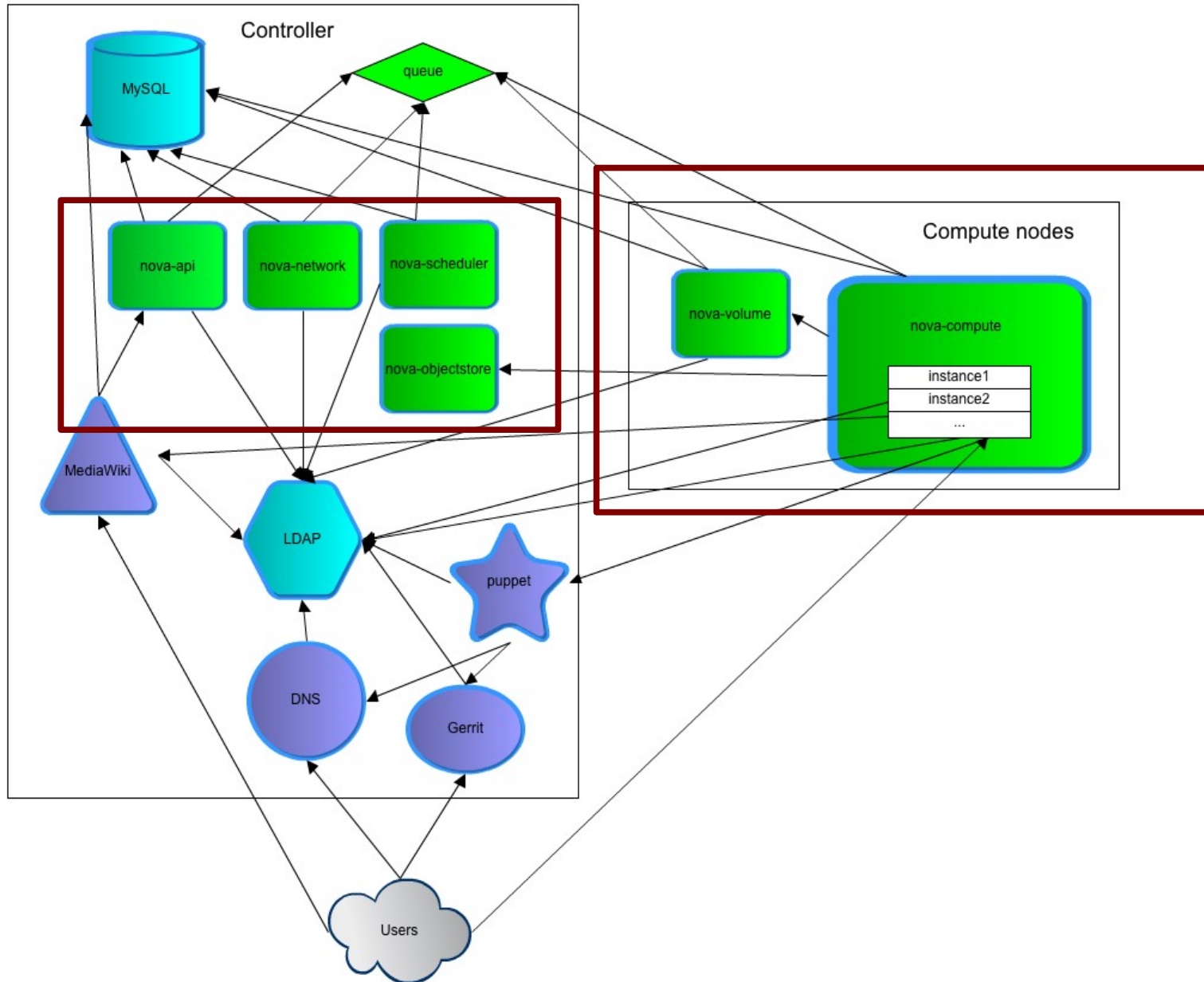
- New projects mirror community or foundation initiatives
 - Devs build architecture in new project
 - Devs request merge for puppet changes via gerrit
 - Project instances moved to default project and tested
 - Project moved to production cluster

Implementation Details

Test/Dev Architecture



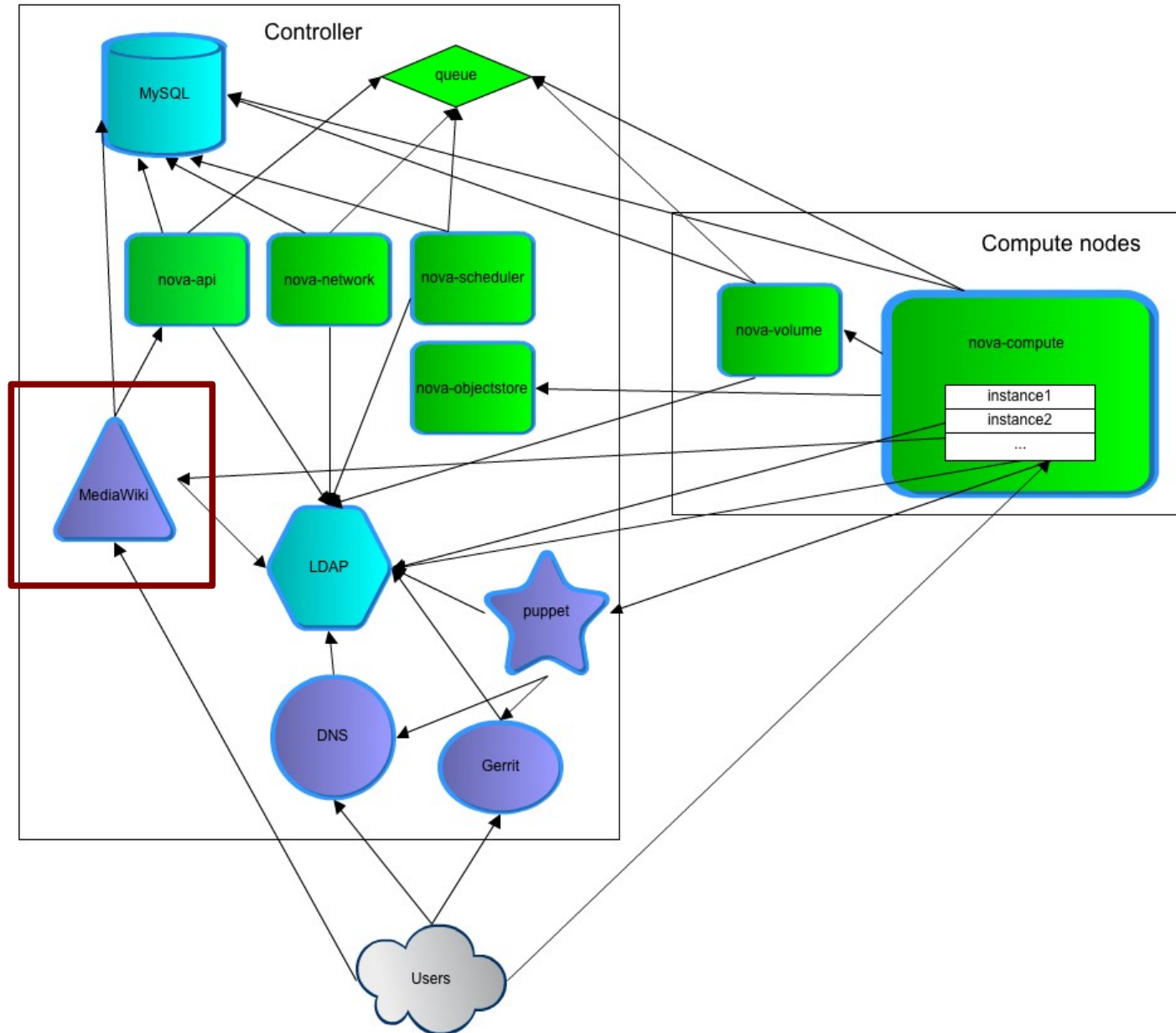
Test/Dev Architecture



OpenStack Configuration

- Current:
 - One zone: 1 controller, 3 compute nodes
- Future:
 - Test/dev zone per datacenter
 - Production zone per datacenter
 - Wikimedia Labs

Test/Dev Architecture



OpenStackManager

- MediaWiki extension
- Support for instance, security group, address, volume, key, sudo, DNS, and LDAP management
- Using EC2 API
- Self-documenting via MediaWiki templates

Semantic MediaWiki Integration

- Templates contain semantic annotations
- Nova information queryable via annotations
- Queries displayable via numerous outputs
- Example: Display the sum of storage in GB used for instances in project “tesla” who have the puppet variable “storage_server” set to “true”

Nova Resource:I-00000011

Resource Type	instance
Instance Name	inst13
Reservation Id	r-4qk0bzig0
Instance Id	I-00000011
Instance State	running
Instance Host	nova-compute1
Instance Type	m1.tiny
RAM Size	512
Number of CPUs	1
Amount of Storage	0
Image Id	ami-00000003
Project	tesla
Availability Zone	nova
Region	
Security Group	default
Launch Time	2011-04-13T20:36:14Z ⚠
FQDN	i-00000011.sdtpa.tesla.wmnet
Public IP	208.80.152.242
Private IP	10.0.0.4
Puppet Class	base, ldap::client::wmf-cluster, exim::simple-mail-sender, ganglia
Puppet Var	ldap_all=true, lvs_realservers_ips=, cluster=

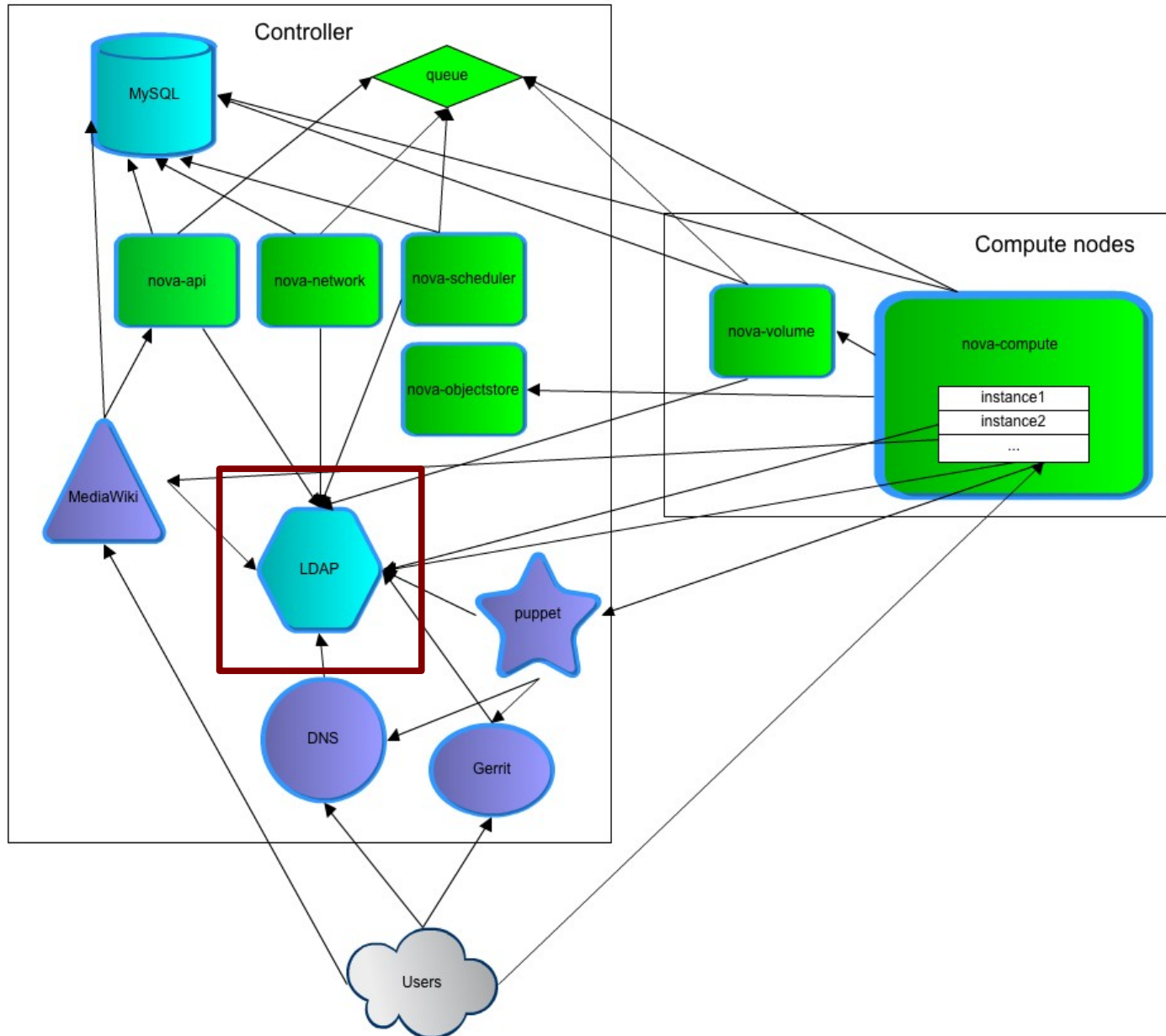
Basic query

[\[edit\]](#)

```
{#{ask:[[Resource Type::instance]]
|?Instance Name
|?Instance Type
|?Image Id
|?FQDN
|?Launch Time
|?Puppet Class
|?Modification date
|?Instance Host
|?Number of CPUs
|?RAM Size
|?Amount of Storage
format=broadtable
limit=20
order=DESC
sort=Modification date
offset=0
}}
```

Instance Name	Instance Type	Image Id	FQDN	Launch Time	Puppet Class	Modification date	Instance Host	Number of CPUs	RAM Size	Amount of Storage
i-00000012	inst14	m1.tiny	ami-00000003	i-00000012.sdtpa.tesla.wmnet	base ldap::client::wmf-cluster exim::simple-mail-sender	25 April 2011 18:42:21	nova-compute2	1	512	0
i-00000011	inst13	m1.tiny	ami-00000003	i-00000011.sdtpa.tesla.wmnet	base ldap::client::wmf-cluster exim::simple-mail-sender ganglia	22 April 2011 23:32:13	nova-compute1	1	512	0

Test/Dev Architecture



LDAP Integration

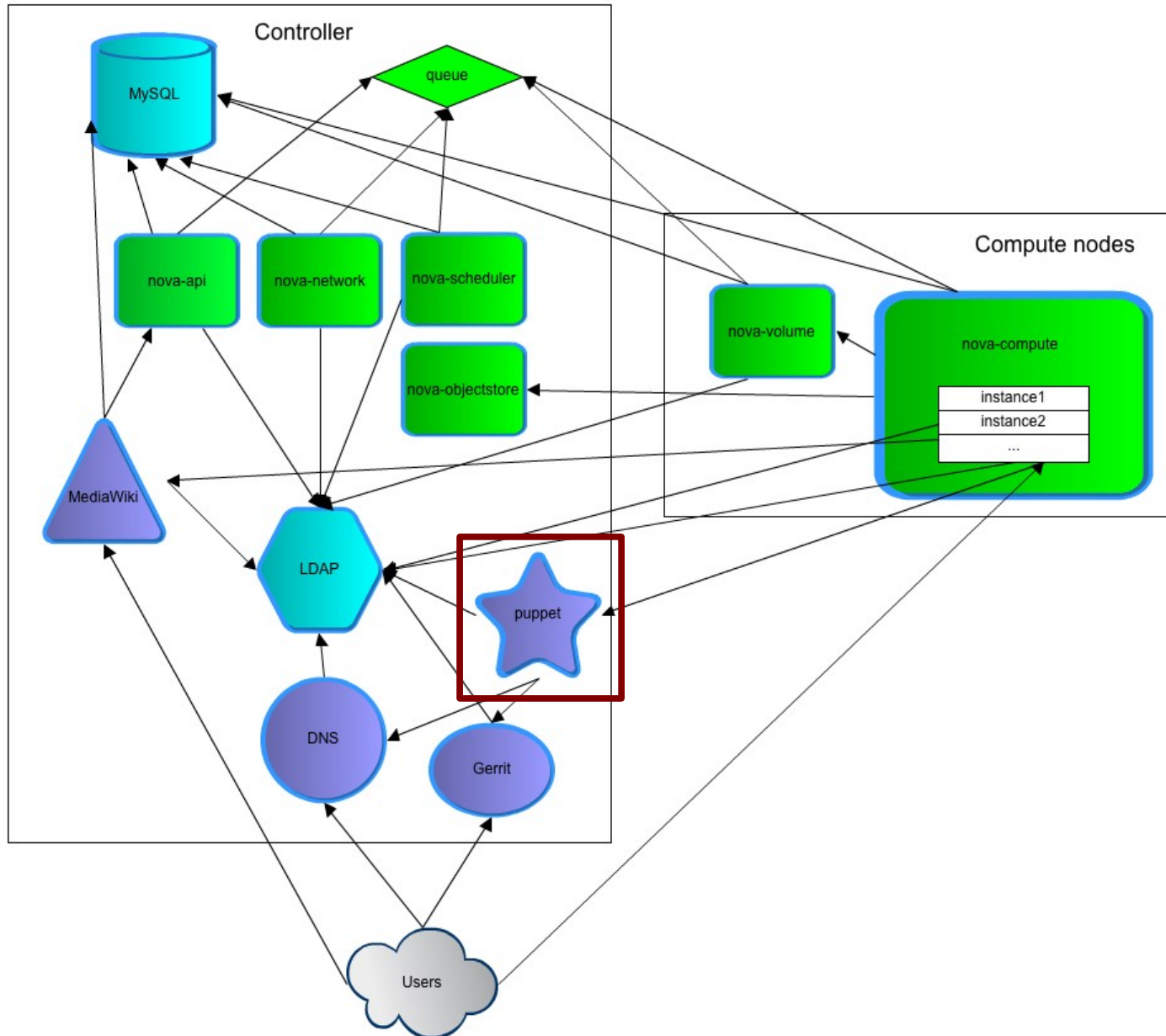
- MediaWiki/Gerrit/Nova/Puppet/DNS with LDAP backend
 - Using OpenDJ from ForgeRock
- Instances configured by puppet to use LDAP
 - Wiki account = Shell account
 - Nova projects = Posix Groups
 - Special project role = Sudo access

Authn/Authz Design

- User accounts stored in LDAP
 - Managed by MediaWiki (LdapAuthentication and OpenStackManager extensions)
- MediaWiki account = Nova/Gerrit/Shell account
 - UUIDs for Nova, passwords for Gerrit/MediaWiki/sudo, SSH keys for shell access
 - Default gid/shell via MediaWiki configuration
 - Sudo policies managed via puppet and LDAP

```
# laner, people, tesla.wikimedia.org
dn: cn=laner,ou=people,dc=tesla,dc=wikimedia,dc=org
sshPublicKey: ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEA5i6EW2Qwv8bEEVOM9UQnSU9i+83
pz0tmJ9zU37jimdmNmuxUb/2hi1mzmJlDRYDiZ08dII002MhkkQR0Q629kWU+Dyx2RkxA+HF+vDmS
hpsp/PNSsPs6+3qDJs89Af7SRvAQJ3jVmQqJ1TzqniLu1Ab87TDJoFNE2Wjq1P1UWDLZa88023C0
65dL8e907QR70HYPLxbpiJMLYFvdJ1nByquo9t+iV3Iu8/WQS1JOPsGrIN282qyc3EErir03et75k
S7h+1Zhr+Z6BB0M02cd6SJD11cChcIrlHzs4zpufUzWXq9ELBmIaxYBH5iUYYM4ezSyA+qEbDnEpw
eJiW5w== laner@kaji
uid: laner
loginShell: /bin/bash
secretKey: b97b1daa-4471-4763-be6a-f44adfa80c08
accessKey: 447ca864-041b-4437-8db7-e246297b9b3b
isNovaAdmin: FALSE
objectClass: person
objectClass: organizationalPerson
objectClass: inetorgperson
objectClass: ldappublickey
objectClass: shadowaccount
objectClass: novauser
objectClass: posixaccount
objectClass: top
cn: laner
sn: laner
homeDirectory: /home/laner
uidNumber: 500
mail: rlane@wikimedia.org
gidNumber: 500
displayName: Ryan Lane
```

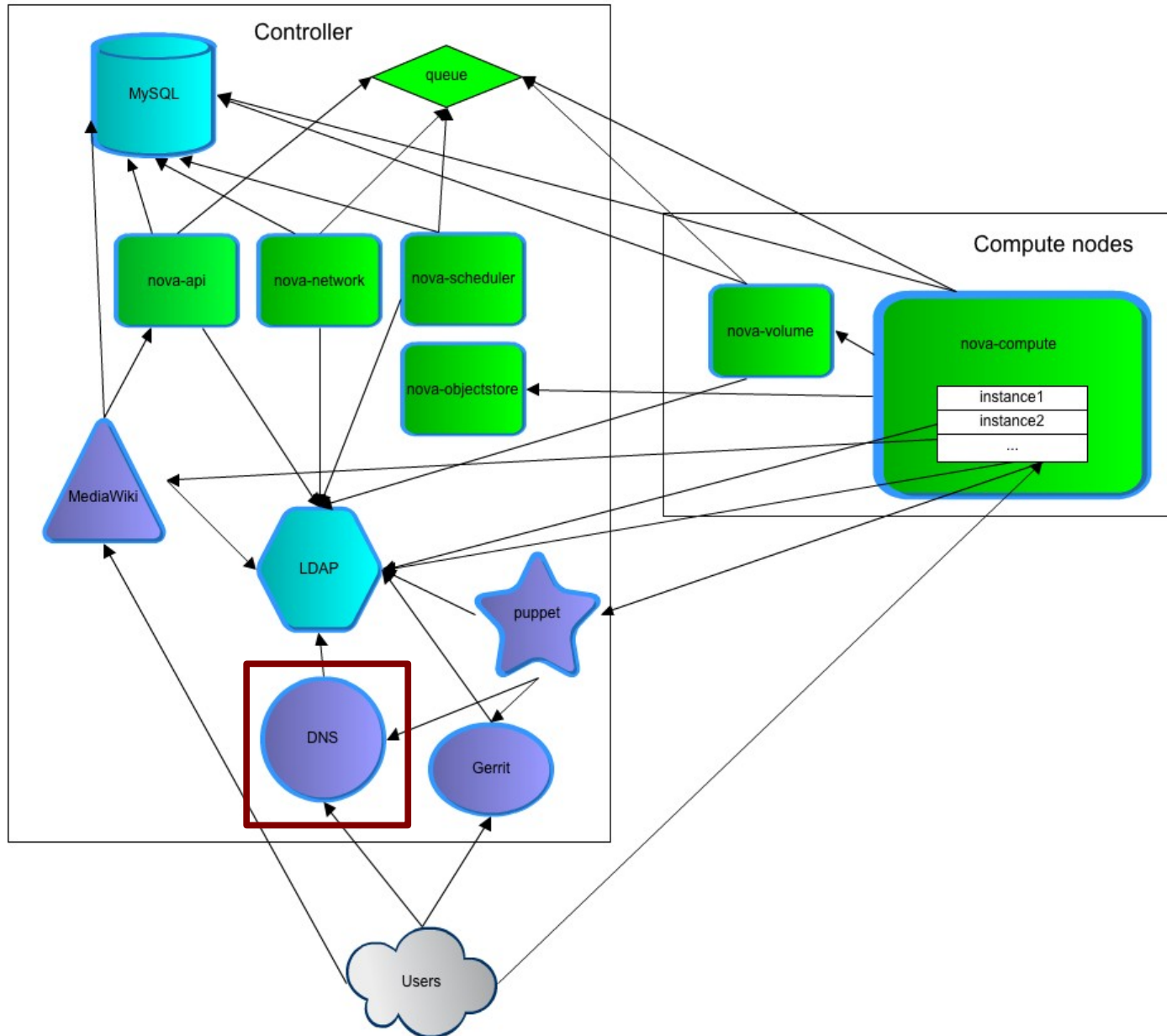
Test/Dev Architecture



Puppet Integration

- Puppet w/ LDAP backend
 - Instance creation = Puppet node LDAP entry
 - Variables always added via MediaWiki:
 - Project
 - Instance creator's wiki user name, email address, and language
 - More puppet classes and variables via MediaWiki config

Test/Dev Architecture

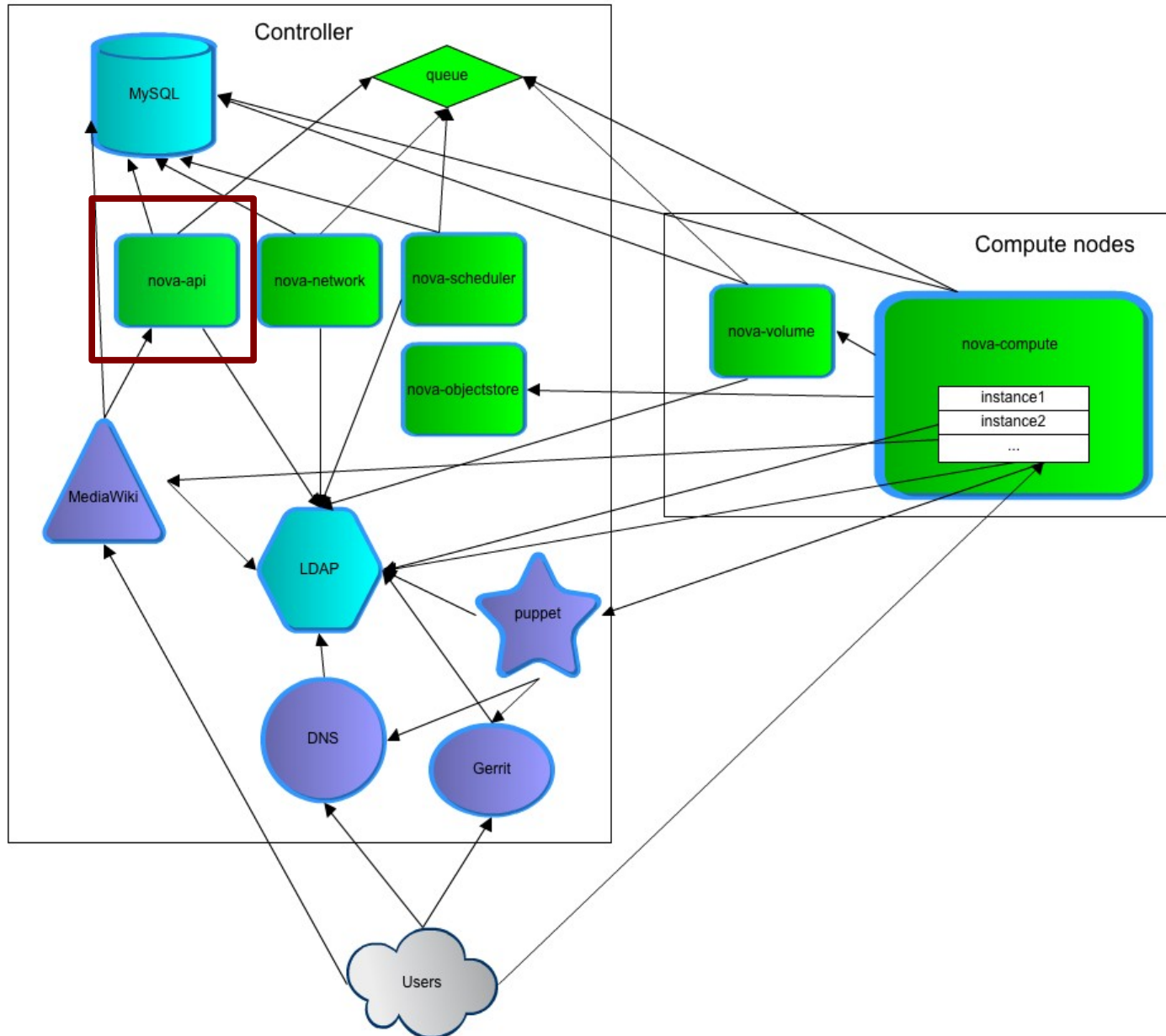


PowerDNS Integration

- PowerDNS w/LDAP backend
 - Manages public and private domains
 - Instance creation = Private DNS LDAP entry
 - Can add public DNS entries to floating IPs

```
# i-00000007, sdtpa, hosts, tesla.wikimedia.org
dn: dc=i-00000007,dc=sdtpa,ou=hosts,dc=tesla,dc=wikimedia,dc=org
objectClass: domainrelatedobject
objectClass: dnsdomain
objectClass: domain
objectClass: puppetclient
objectClass: dcobject
objectClass: top
puppetVar: ldap_all="true"
puppetVar: lvs_realserver_ips="192.168.1.100"
puppetVar: cluster="tesla"
puppetVar: instancecreator_email=rlane@wikimedia.org
puppetVar: instancecreator_username=Laner
puppetVar: instancecreator_lang=en
puppetClass: base
puppetClass: ldap::client::wmf-cluster
puppetClass: exim::simple-mail-sender
puppetClass: nagios::monitor
puppetClass: lvs::realserver
puppetClass: cache::bits
l: sdtpa
associatedDomain: i-00000007.sdtpa.tesla.wmnet
associatedDomain: testarticle3.sdtpa.tesla.wmnet
dc: i-00000007
aRecord: 10.0.0.6
```

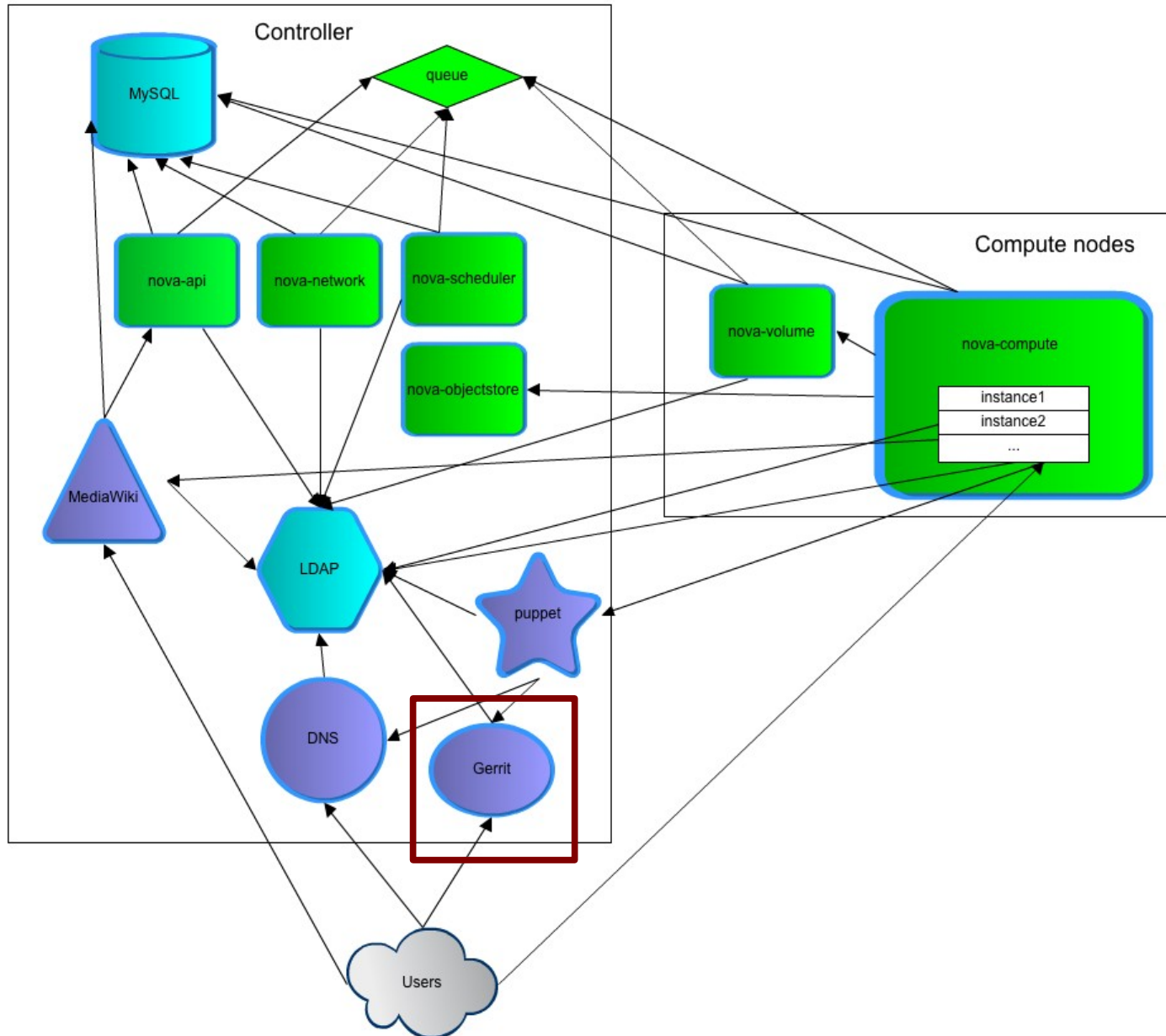
Test/Dev Architecture



CloudInit Integration

- Extensive use of CloudInit
 - Default cloud init via MediaWiki config options
 - Cloud-config, scripts, and upstarts supported
 - Using to connect instances with puppet

Test/Dev Architecture



Gerrit Integration

- Puppet config in gerrit
 - All test/dev members can branch
 - First change approval by community
 - Final approvals and merges by ops team

Join our community

- We are hiring
- We love contributors

Uses outside of Wikimedia

- Way to balance ops sanity and developer access
- Our architecture as a reference use

Uses outside of Wikimedia

- Self-documenting architecture
- Queryable architecture

Questions? Comments?

Ryan Lane

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IRC: Ryan_Lane on Freenode; channels:
#openstack, #mediawiki, #wikimedia-
operations, #wikimedia-tech