

*User Report:*

# Ganeti Web Manager (GWM)

Lance Albertson  
Director  
lance@osuosl.org  
@ramereth

# Overview

- Goals and components
- State of the GWM Community
- Difficulties with GWM and/or Ganeti
- New and upcoming features
- How the OSU users GWM + Ganeti

# About the OSUOSL

- Research and Infrastructure
  - Provide infrastructure hosting for more than 160 FOSS projects
- Education
  - Mentoring 20+ students, giving real-world hands-on experience in devops
- Outreach
  - Promoting awareness and collaboration around FOSS both on and off campus

# GWM Team & History

- 1 full-timer, 5-6 students (2-3 active)
- Started in 2009 after LinuxCon with GRNET
- Driven by undergraduate students
- GSoC students

# What is GWM?

- Django web framework
- JQuery
- Open Source Components
  - Django Object Permissions
  - Django Object Log
  - NoVNC
  - VNC Auth Proxy

# GWM Goals

- GUI interface for admins & users
- Leverage most of Ganeti's features via RAPI
- Provide granular permission control
- Provide a quota system
- Organize users arbitrarily

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## Overview

Cluster Status						
Cluster	Version	Memory Allocated [GiB]		Disk Allocated [GiB]		Nodes VMs
ganeti-civicism	v2.6.2	<div><div></div></div>	46.00 / 94.21	<div><div></div></div>	0.23 / 1.78	2/2 13/13
ganeti-dev	v2.6.2	<div><div></div></div>	11.75 / 21.55	<div><div></div></div>	0.28 / 1.17	3/4 11/12
ganeti-gentoo	v2.6.2	<div><div></div></div>	18.00 / 62.82	<div><div></div></div>	0.59 / 3.25	2/2 7/7
ganeti-internal	v2.6.2	<div><div></div></div>	31.00 / 125.80	<div><div></div></div>	0.54 / 1.80	2/2 10/12
ganeti-orvsd	v2.6.2	<div><div></div></div>	127.67 / 228.13	<div><div></div></div>	1.05 / 2.65	8/8 43/56
ganeti-osgeo	v2.6.2	<div><div></div></div>	60.50 / 94.47	<div><div></div></div>	1.43 / 1.74	2/2 12/13
ganeti-phpbb	v2.6.2	<div><div></div></div>	37.00 / 62.96	<div><div></div></div>	609.01 / 797.91	2/2 15/15
ganeti-psf	v2.6.2	<div><div></div></div>	40.00 / 62.79	<div><div></div></div>	1.08 / 1.62	2/2 21/21
ganeti-te	v2.6.2	<div><div></div></div>	6.00 / 7.81	<div><div></div></div>	212.00 / 400.97	1/1 2/2
ganeti	v2.6.2	<div><div></div></div>	153.09 / 373.46	<div><div></div></div>	2.77 / 21.94	6/6 121/127

Virtual Machine Status		
Cluster	Running	Total
ganeti	121	127
ganeti-civicism	13	13
ganeti-psf	21	21
ganeti-osgeo	12	13
ganeti-te	2	2
ganeti-dev	11	12
ganeti-orvsd	43	56

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## Cluster : ganeti-supercell.osuosl.bak

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◆	Name ▼	Owner ◆	Node ◆	OS ◆	RAM ◆	Disk Space ◆	vCPUs ◆
✓	<a href="#">bigtop-centos.osuosl.test</a>	Apache Bigtop	supercell2	Centos ( <i>image</i> )	1.00 GiB	5.00 GiB	1
✓	<a href="#">bigtop-jenkins.osuosl.test</a>	Apache Bigtop	supercell2	Ubuntu Lucid ( <i>image</i> )	4.00 GiB	50.00 GiB	1
✓	<a href="#">bigtop-lucid.osuosl.test</a>	Apache Bigtop	supercell2	Ubuntu Lucid ( <i>image</i> )	1.00 GiB	5.00 GiB	1
✓	<a href="#">chance_sux100</a>	osuadmin	supercell1	Centos ( <i>image</i> )	512 MiB	4.00 GiB	2
✓	<a href="#">civiclient1.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.34 GiB	8.58 GiB	1
✓	<a href="#">civiclient2.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.34 GiB	8.58 GiB	1
✓	<a href="#">civiclient3.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.34 GiB	8.58 GiB	1
✓	<a href="#">civiclient4.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.34 GiB	8.58 GiB	1
✓	<a href="#">civiclient5.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.34 GiB	8.58 GiB	1
✓	<a href="#">civiclient6.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid 32bit ( <i>image</i> )	1.27 GiB	8.50 GiB	1
✓	<a href="#">civihead.osuosl.test</a>	CiviCRM	supercell2	Ubuntu Lucid ( <i>image</i> )	2.00 GiB	12.00 GiB	2



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**ganeti-supercell : drupaltestbot1823.osuosl.test**







Overview

Users

Log

Console

<b>Owner</b>	Drupal
<b>Created on</b>	15/08/2013
<b>Last modified</b>	15/08/2013
<b>Status</b>	Running
<b>Primary node</b>	<a href="#">supercell1.osuosl.bak</a>
<b>Secondary node</b>	
<b>Operating System</b>	Debian Squeeze ( <i>image</i> )
<b>Autostart</b>	✓
<b>VNC</b>	supercell1.osuosl.bak::12207

 Shutdown Immediate Shutdown Reboot Reinstall Edit Change Owner Rename Create Template Delete**Hardware**

<b>VCPUs</b>	8
<b>Memory (Min/Max)</b>	5.00 GiB / 5.00 GiB
<b>NIC type</b>	paravirtual

**Disks**

Disk	Type	Size
disk/0	paravirtual	8.00 GiB






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# ganeti-supercell : drupaltestbot1823.osuosl.test

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-  Encrypt
-  Disconnect
-  Shutdown
-  Reboot
-  Ctrl-Alt-Delete
- 

Connected (unencrypted) to: QEMU (drupaltestbot1823.osuosl.test)

```
Debian GNU/Linux 6.0 drupaltestbot1823 tty1
drupaltestbot1823 login: _
```

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## Cluster : ganeti-supercell.osuosl.bak

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	Name	Permissions	Quota	
	HipHop	create_vm	CPUs:64 Memory:16.0 GB Disk:312.5 GB	
	OSUOSL	admin	CPUs:64 Memory:20.0 GB Disk:39.1 GB	
	Apache Hive	create_vm	CPUs:8 Memory:2.0 GB Disk:39.1 GB	
	Drupal	create_vm	CPUs:140 Memory:113.2 GB Disk:219.1 GB	
	OpenMRS	create_vm	CPUs:8 Memory:5.0 GB Disk:39.1 GB	
	CiviCRM	create_vm	CPUs:8 Memory:10.0 GB Disk:63.5 GB	
	phpBB	create_vm	CPUs:8 Memory:4.0 GB Disk:39.1 GB	
	Parrot	create_vm	CPUs:8 Memory:4.0 GB Disk:39.1 GB	
	Perl 6	create_vm	CPUs:8 Memory:2.0 GB Disk:39.1 GB	
	freedroid	create_vm	CPUs:8 Memory:2.0 GB Disk:39.1 GB	
	Apache Bigtop	create_vm	CPUs:16 Memory:8.0 GB Disk:78.1 GB	
	OPB	create_vm	CPUs:8 Memory:2.0 GB Disk:39.1 GB	
	Boost	create_vm	CPUs:8 Memory:8.0 GB Disk:39.1 GB	
	Mercurial	create_vm	CPUs:16 Memory:8.0 GB Disk:58.6 GB	

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**Groups : CiviCRM**

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Resource Usage

Permissions

Log

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# GWM Difficulties

- Ganeti's RAPI
  - Not an object oriented model
  - Poor documentation on return values on invalid input data
- GWM is not asynchronous
  - Hard to manage state
  - Lots of polling/updating

# Object Oriented RAPI

## Normal Ganeti RAPI

```
{
  "name": "web.example.com",
  "status": "running",
  "disk_usage": 20480,
  "nic.bridges": [
    "xen-br0",
    "xen-br1",
  ],
  "nic.macs": ["01:23:45:67:89:01", "aa:bb:cc:dd:ee:ff"],
  "nic.ips": ["192.168.1.100", None],
  ...
},
```

- Harder to use as a programmer
- Parse through several lists
- Difficult to know what what 1 NIC is
  - Which MAC is for which IP or Bridge?
  - No explicit hierarchy

# Object Oriented RAPI

## Normal Ganeti RAPI

```
{
  "name": "web.example.com",
  "status": "running",
  "disk_usage": 20480,
  "nic.bridges": [
    "xen-br0",
    "xen-br1",
  ],
  "nic.macs": ["01:23:45:67:89:01", "aa:bb:cc:dd:ee:ff"],
  "nic.ips": ["192.168.1.100", None],
  ...
},
```

## Better Ganeti RAPI

```
{
  "name": "web.example.com",
  "status": "running",
  "disk_usage": 20480,
  "nics": [
    {
      "mac": "01:23:45:67:89:01",
      "ip": "192.168.1.100",
      "id": "SOMEUNIQUE_ID_1"
    },
    {
      "mac": "aa:bb:cc:dd:ee:ff",
      "ip": None,
      "id": "SOMEUNIQUE_ID_2"
    }
  ],
  ...
}
```

# RAPI Documentation Issues

- Documentation inconsistent in what should be returned if bad data is sent
- Makes it difficult to ensure GWM works around these issues properly
- Example:
  - *Querying non-existent Job's doesn't return an error code*

```
{"status": null, "ops": null, "end_ts": null, "start_ts": null,
"summary": null, "received_ts": null, "opresult": null,
"opstatus": null, "oplog": null, "id": "4"}
```



# GWM non-asynchronous

- Waiting on Ganeti for updates
  - If Ganeti takes 10s, GWM waits 10s
- Asynchronous benefits
  - Send a request and queue it
  - Poll data as a separate action
  - Speeds up GWM while still waiting on Ganeti to respond in the background
- Celery/Gunicorn

# Latest New Features

- VM Wizard
- Ganeti Job lists
- LDAP Support
- Improved documentation
- Improvements with caching

# VM Wizard

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**Create Virtual Machine :****Step 3 of 5**

Cluster: ganeti.osuosl.bak

Owner: osuadmin

Hypervisor
Operating System
Virtual CPU Count
Minimum RAM (MiB)
Maximum RAM (MiB)
Disk Template
Disk/0 Size (MB)
NIC/0 Mode
NIC/0 Link

KVM

Centos ▼

Plain ▼

bridged ▼

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## Cluster : ganeti-internal.osuosl.bak

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Job Id	Object	Operation	Status	Finished
40	chef	Instance Create	success	04/02/2013 10:40 p.m.
42	chef	Instance Startup	success	04/02/2013 10:46 p.m.
43	chef	Instance Shutdown	success	04/03/2013 12:20 a.m.
45	chef	Instance Reinstall	success	04/03/2013 12:21 a.m.
46	chef	Instance Startup	success	04/03/2013 8:08 a.m.
47	chef	Instance Shutdown	success	04/03/2013 11:17 a.m.
49	chef	Instance Reinstall	success	04/03/2013 11:18 a.m.
50	chef	Instance Startup	success	04/03/2013 11:18 a.m.
57	logs	Instance Create	success	04/04/2013 12:34 p.m.
61	logs	Instance Reboot	success	04/04/2013 3 p.m.
63	logs	Instance Shutdown	success	04/04/2013 3:06 p.m.
65	logs	Instance Startup	success	04/04/2013 3:17 p.m.
68	logs	Instance Reboot	success	04/04/2013 11:47 p.m.
71	mon1	Instance Create	success	04/05/2013 12:06 p.m.
74	mon1	Instance Startup	success	04/05/2013 12:34 p.m.
75	mon1	Instance Shutdown	success	04/05/2013 3:02 p.m.
78	mon1	Instance Reinstall	success	04/05/2013 3:03 p.m.

# Ganeti Job Info

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**ganeti-internal : Jobs : 68**

Overview		
Status	success	
VirtualMachine		
Completed	04/04/2013	

Instance Reboot		
Status:	success	
Started:	04/04/2013	
Finished:	04/04/2013	
Result:	None	
comment	None	
priority	0	
ignore_secondaries	False	
dry_run	False	
depends	None	
instance_name	logs.osuosl.org	
debug_level	0	
reboot_type	hard	
shutdown_timeout	120	



# Read The Docs

<http://ganeti-webmgr.readthedocs.org>

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### Quick search

Enter search terms or a module, class or function name.

# Ganeti Web Manager

Ganeti Web Manager is a [Django](#) based web frontend for managing [Ganeti](#) virtualization clusters. Since Ganeti only provides a command-line interface, Ganeti Web Manager's goal is to provide a user friendly interface to Ganeti by being feature complete with Ganeti's [RAPI](#). On top of Ganeti it provides a permission system for managing access to clusters and virtual machines and an in browser VNC console.

If you don't already have a Ganeti cluster setup, these [directions](#) can help you get started. If you are looking for support, please contact us through these [channels](#). If you are looking to deploy Ganeti Web Manager for the first time, check out our [Installation](#) guide. If you already have a Ganeti Web Manager instance running it might be time to [upgrade](#).

Ganeti Web Manager is licensed under the [GPLv2](#). It is currently developed and maintained by the Oregon State University Open Source Lab and a handful of volunteers. If you would like to get involved in development see our [development](#) guide.

## Getting Started

- [Installation](#)
- [Deployment](#)
- [Importing a Cluster](#)

## Features

- [Permissions](#)
- [Object Log](#)
- [VNC](#)
- [SSH Keys](#)
- [LDAP](#)
- [Virtual Machine Templates](#)

# Upcoming Features

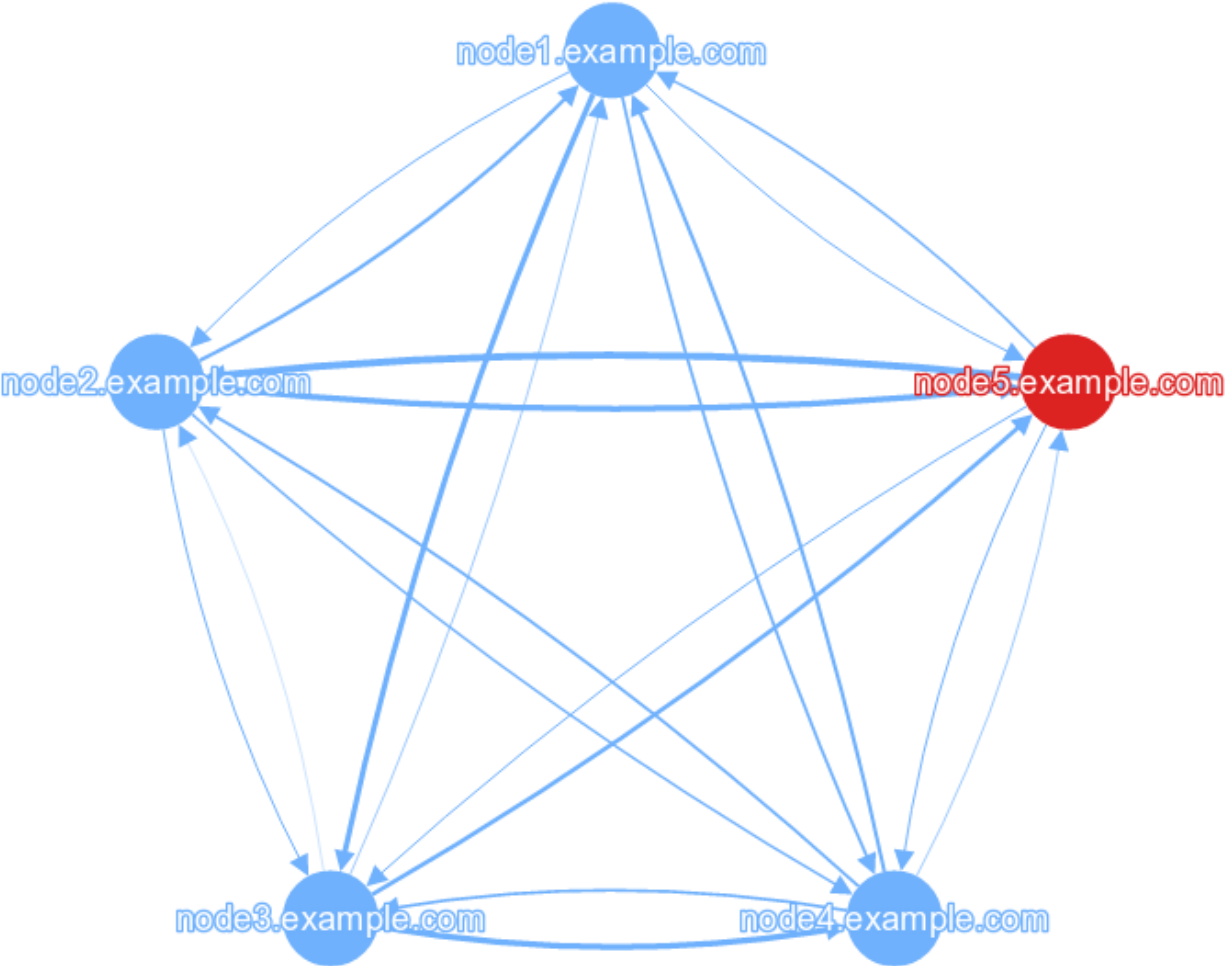
- Improved installation/upgrade (GSoC)
  - PIP installable package
  - Binary built envs using wheel
  - Installation script
- Cluster-Node Visualization tool (GSoC)
- Asynchronous Ganeti RAPI queries
  - Celery & Gunicorn
- Improved Ganeti feature parity
- Serial Console (*maybe, finally?*)

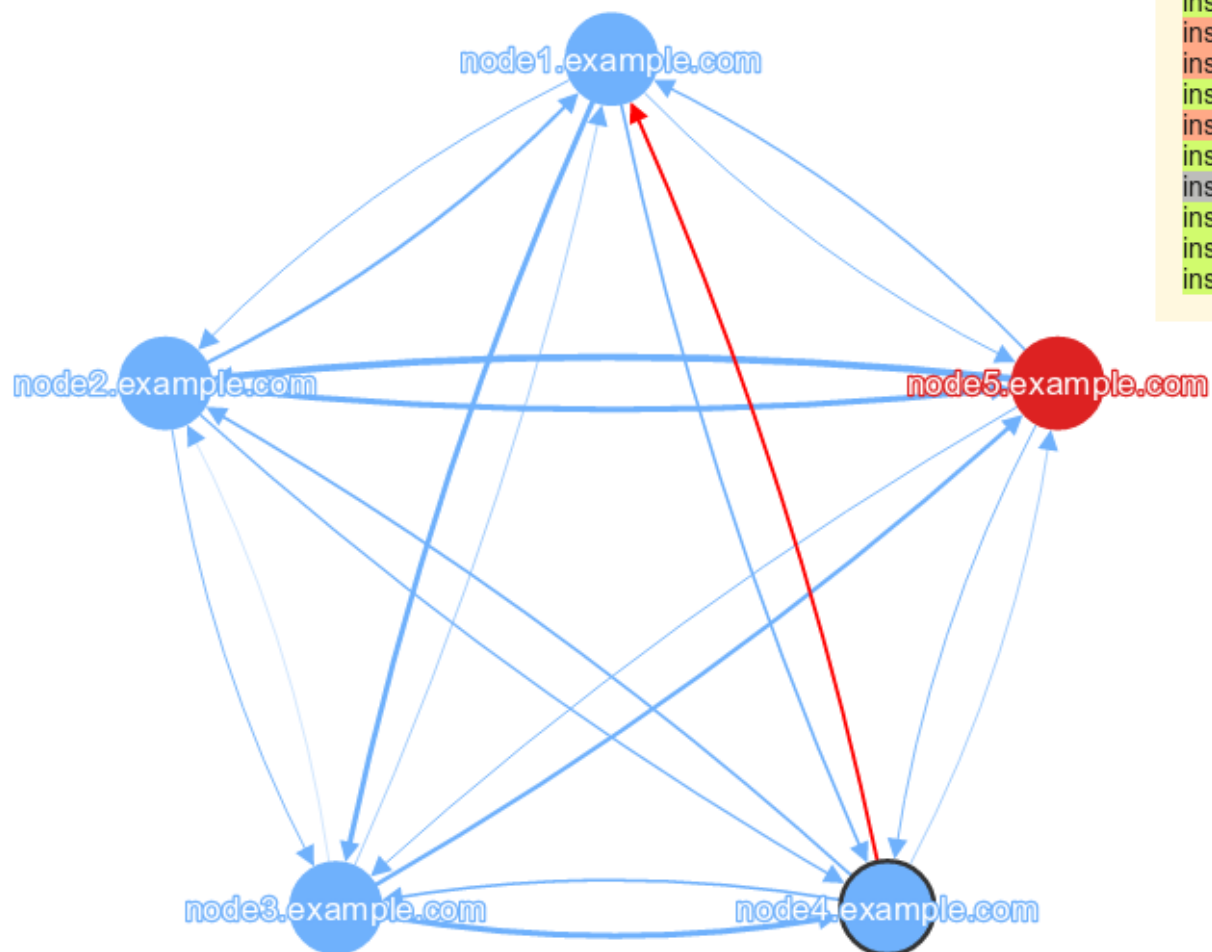
# Improved Installation

- GSoC Student (*Piotr Banaskiewicz - Poland*)
- Modularized the code-base
- PIP compatible now
  - Binary environments using wheel
- Automated via an installation script
  - [github.com/pbanaszkiwicz/ganeti\\_webmgr-setup](https://github.com/pbanaszkiwicz/ganeti_webmgr-setup)
- RPM/Deb Packages
  - Not currently feasible with virtualenv
  - Absolute paths when creating binary packages

# Node/Instance Visualization

- GSoC Student (*Pranjal Mittal - India*)
- Visualize the primary/secondary relationships
- Show how balanced a cluster is
- Using Cytoscape Javascript library
- <http://pramttl.github.io>



[Refresh Cluster](#)

### Primary Instances

instance106.example.com	instance57.example.com
instance107.example.com	instance60.example.com
instance11.example.com	instance66.example.com
instance29.example.com	instance71.example.com
instance30.example.com	instance76.example.com
instance31.example.com	instance78.example.com
instance33.example.com	instance82.example.com
instance35.example.com	instance97.example.com
instance43.example.com	
instance48.example.com	

**Owner:** Pranjali  
**OS:** image+cirros  
**Ram:** 128  
**Status:** running

## Help Active

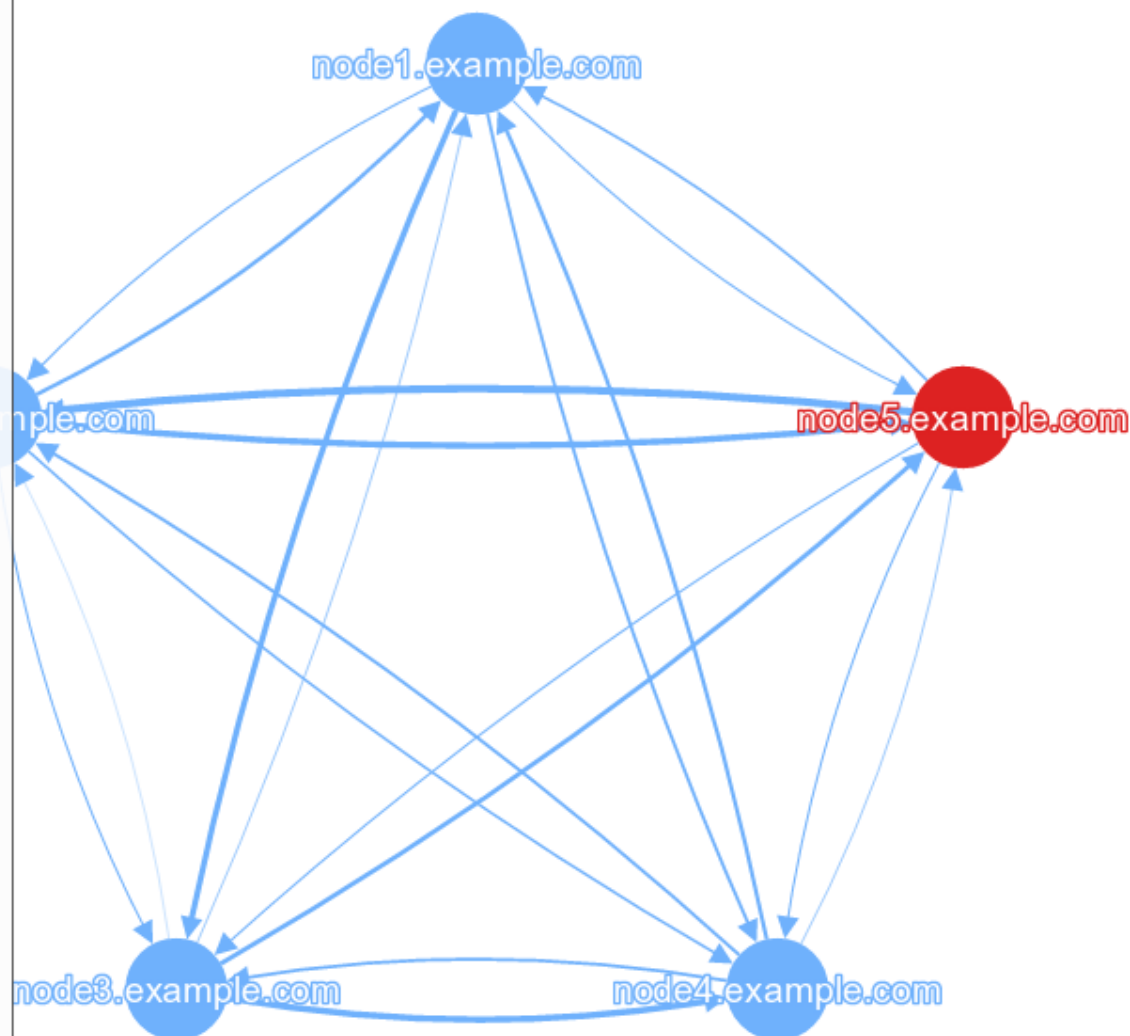
Press 'h' again to toggle

## Usage/Shortcuts

- Pan the graph - Arrow Keys
- Zoom In/ Out - Scroll (mouse pointer at focus point)
- Click a Node to view its primary instances - on a panel in the right.
- Click on an instance to view FailoverDirection.
- Press 'p' to view primary instances as a part of the graph.
- Press 'p' again to toggle instances for selected node.
- Press 's' to view secondary instances for selected node
- Press 'c' to clear all the visible instances on the graph
- Press 'r' to reset the graph orientation
- Click "Refresh Cluster" to sync map with ganeti

## Additional Information

- Primary Instances refer to the instances directly running over a selected node
- Secondary Instances refer to the instances whose "mirror" lies on the selected node
- Thickness of a particular edge (arrow) indicates number of failover possibilities in that direction.
- Color Codes:
  - Offline Node: Red
  - Offline Instances: Red
  - Running Nodes: Blue
  - Active Instances : Green





# Ganeti Vagrant Provider

- GSoC Student (*Ahmed Shabib - India*)
- Vagrant Ganeti Provider
- What is Vagrant?
  - Tool for testing code/infra
- `vagrant up --provider ganeti`
- Direct RAPI communication
- Intended for temporary testing instances

# How we use GWM & Ganeti

- Primary prod cluster:
  - 110+ instances, 6 nodes
  - busybox, inkscape, qemu, freenode
- Project clusters
  - PSF, Gentoo, OSGeo, ORVSD
- Supercell
  - on-demand testing

# Other Ganeti Projects

- GlusterFS storage support
  - libgfapi + KVM
- Gentleman
  - Simple improved Ganeti python client
  - Integrated with IRC bot
  - [github.com/MostAwesomeDude/gentleman](https://github.com/MostAwesomeDude/gentleman)

# Questions?

Lance Albertson

[lance@osuosl.org](mailto:lance@osuosl.org)

@ramereth

<http://osuosl.org>

<http://lancealbertson.com>

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