

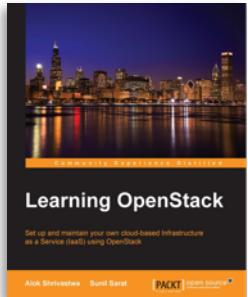


OpenStack Past Present and Future

June 5th, 2017 | Ben Silverman, Principal Cloud Architect



Who is this guy?



BEN SILVERMAN
Principal Cloud Architect, OnX

 @bensilverm

 in/benjsilverman

HIGHLIGHTS

- ✓ 25+ years of IT experience
- ✓ 4 years experience with OpenStack and Active Technical Contributor(ATC)
- ✓ Architected and built the first American Express OpenStack cloud now running ~10,000 instances
- ✓ Worked for Mirantis as a Senior Architect and Systems Engineer
- ✓ Designed architectures for client companies like Comcast, Cox, GCI, Verizon and other Fortune 100 companies
- ✓ Certified in Red Hat and Mirantis OpenStack Distributions
- ✓ Has a Master of Science degree in Information Management from Arizona State's W.P. Carey School of Business
- ✓ Co-authored book, "OpenStack for Architects" (Mar 2017) and Technical Reviewer for "Learning OpenStack(2016)"



OpenStack Presentation

- ▶ **What is OpenStack?**
- ▶ **What's new with the OpenStack Foundation?**
- ▶ **Some cool new production OpenStack clouds**
- ▶ **Project Updates**
 - Core Projects (Common Set)
 - Other Projects
- ▶ **OpenStack Ocata to Infinity!**
- ▶ **Q&A**



A Quick Review of OpenStack

- ▶ What is cloud?
- ▶ What is OpenStack?
- ▶ Where did it come from?
- ▶ How does it work?



What is Cloud and OpenStack?

A Quick Primer



What is Cloud Computing?

“Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.” - NIST



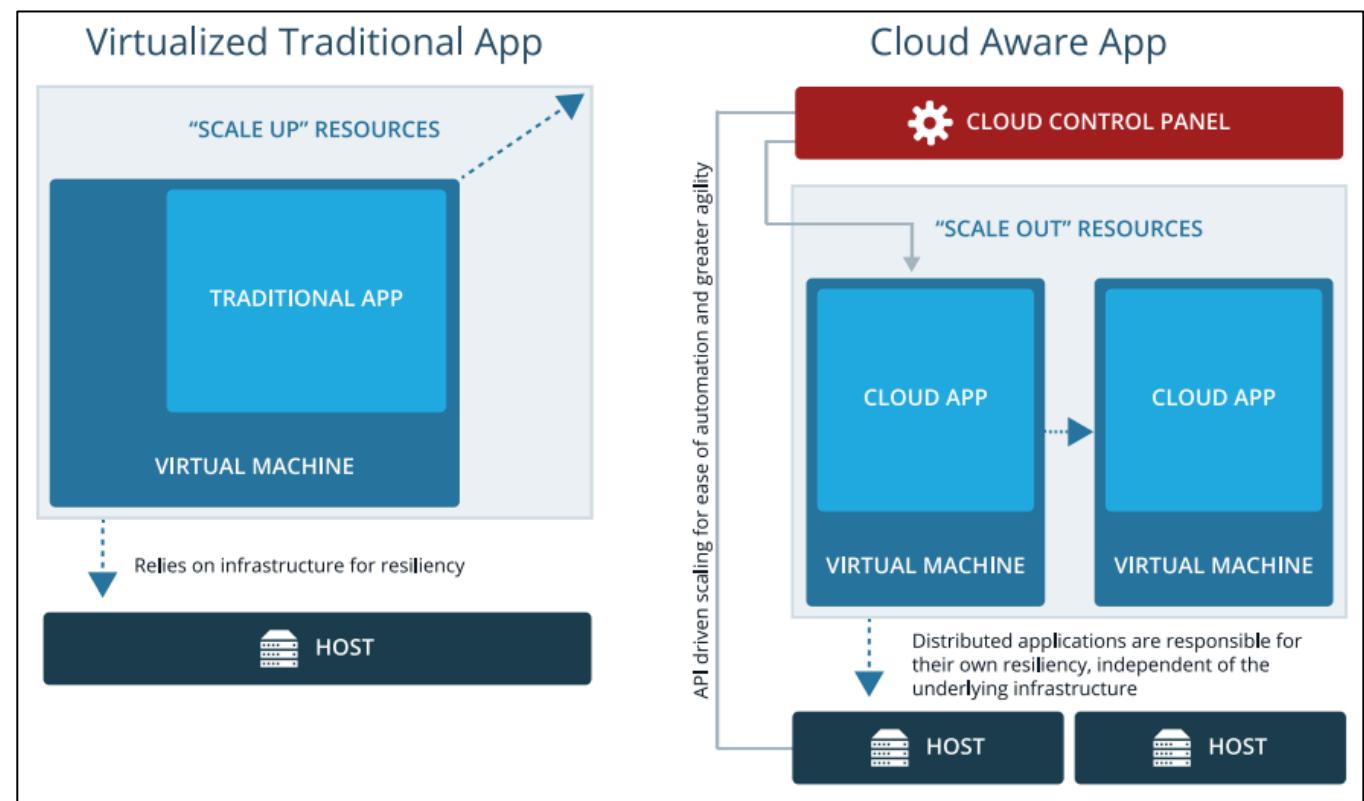
So what is cloud?

The cloud model is comprised of five essential characteristics: **on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service**. It includes three service models: **Software as a Service, Platform as a Service, and Infrastructure as a Service**.

Five Factors of Cloud Computing

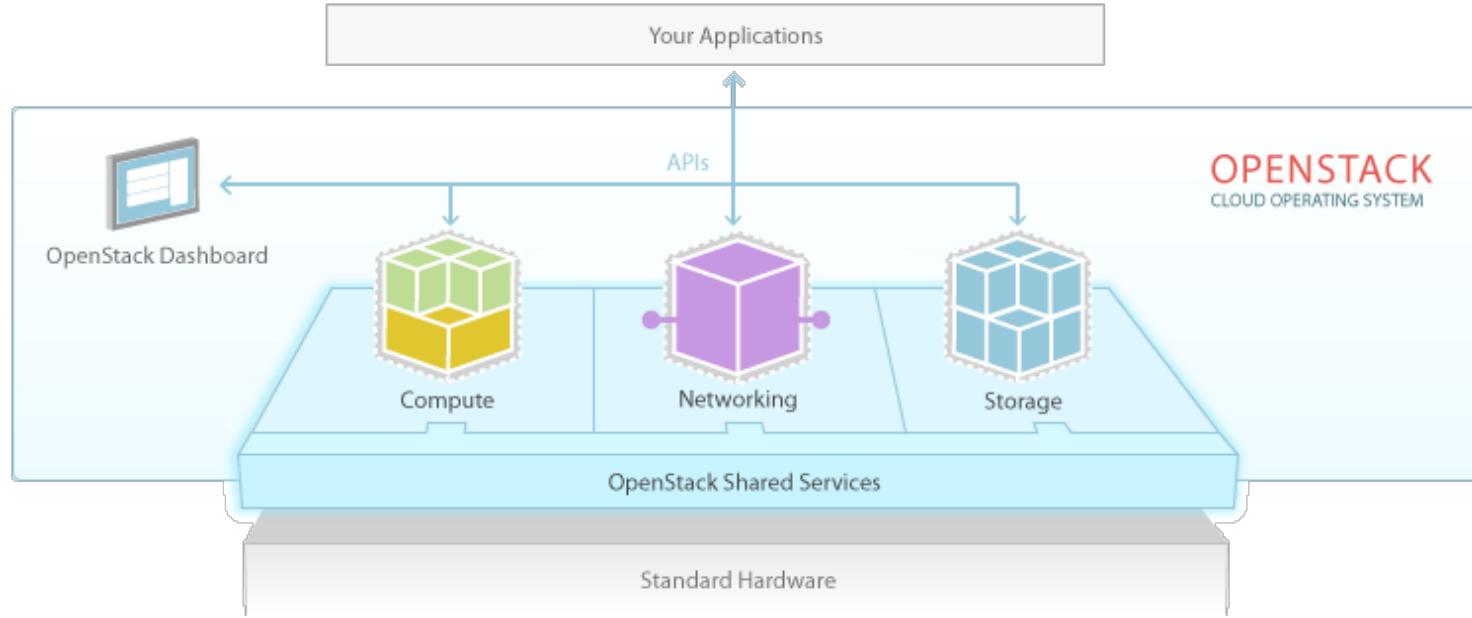
1. On-demand self-service
- 2. Broad network access**
3. Resource pooling
4. Rapid elasticity
5. Measured service

<https://www.nist.gov/sites/default/files/documents/itl/cloud/cloud-def-v15.pdf>





So What is OpenStack? - Introduction



"OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources throughout a datacenter, all managed through a dashboard that gives administrators control while empowering their users to provision resources through a web interface." – OpenStack Foundation

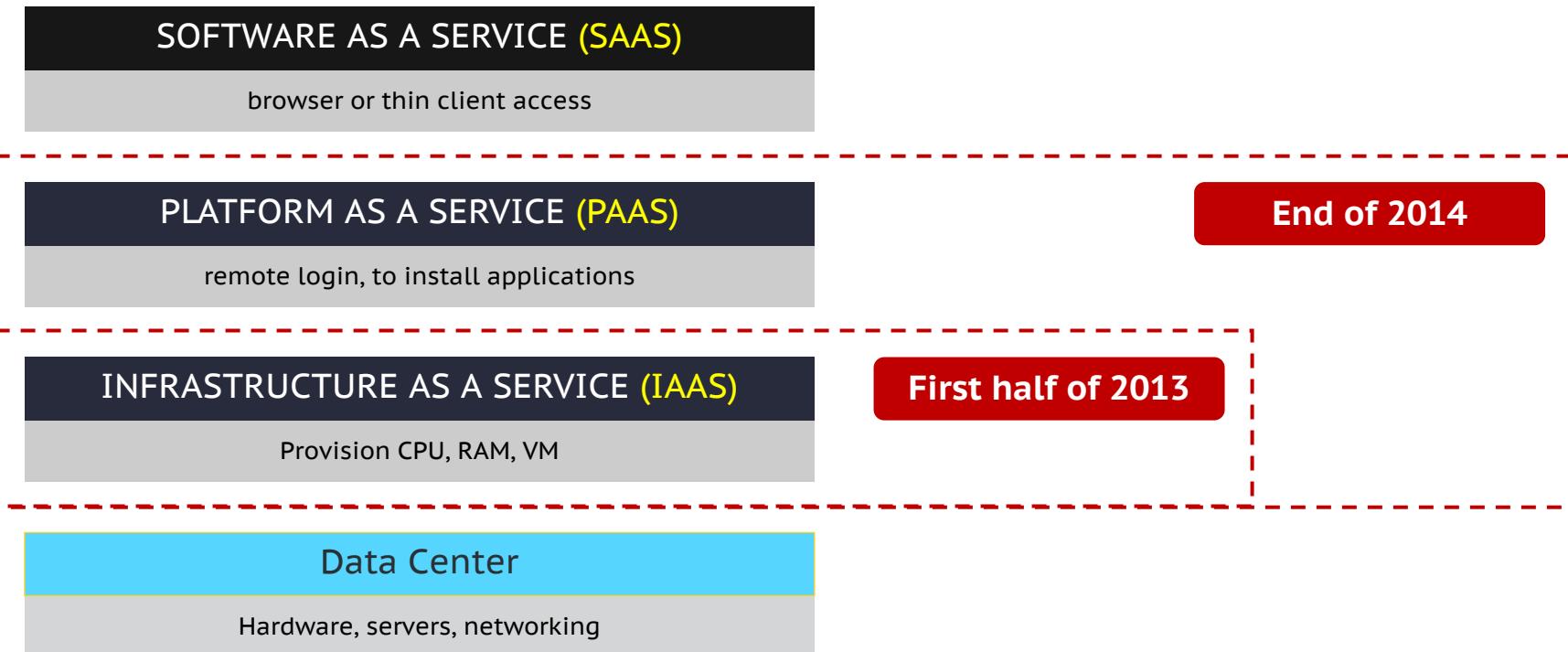


What is The Definition of OpenStack?

“OpenStack is a free and open-source software platform for cloud computing, mostly deployed as an infrastructure-as-a-service (IaaS)” – Wikipedia



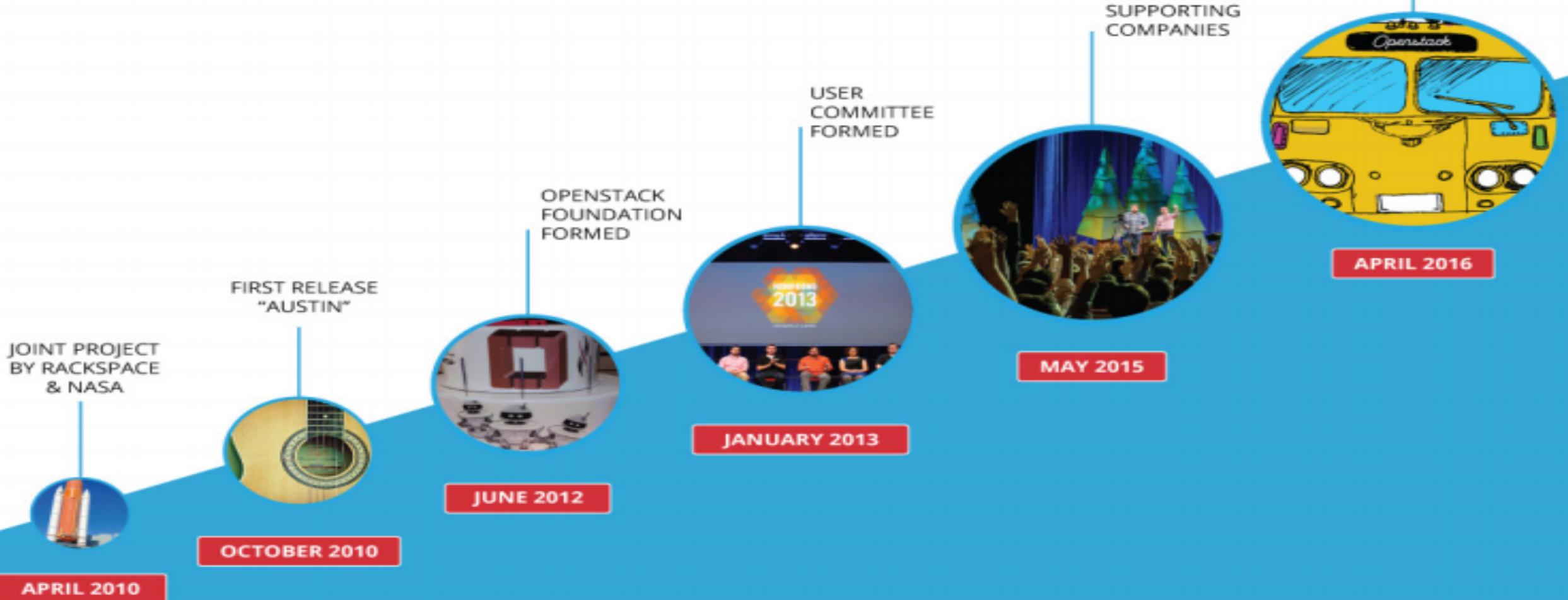
OpenStack and the SPI Model





What is OpenStack – History in Brief

OpenStack History **6 YEARS**





OpenStack Release History Details

DATE	REL	PROJECTS	TYPE	NOTE
Jul 2010	N/A		PoC	* Rackspace Hosting & NASA joint launch
Oct 2010	AUSTIN	Nova, Swift	PoC	
Feb 2011	BEXAR	Nova, Glance, Swift	PoC	
Apr 2011	CACTUS	Nova, Glance, Swift	PoC	** 6 month development cycle starts
Sep 2011	DIABLO	Nova, Glance, Swift	Prod	1 st production release (Cactus) at Internap (10/27)
Apr 2012	ESSEX	Nova, Glance, Swift, Horizon, Keystone	Prod	Common web UI and shared authentication mechanism added
Sep 2012	FOLSOM	Nova, Glance, Swift, Horizon, Keystone, Quantum, Cinder	Prod	OpenStack Foundation Established
Apr 2013	GRIZZLY	Nova, Glance, Swift, Horizon, Keystone, Quantum, Cinder	Prod	Ceilometer and Heat incubation projects added
Oct 2013	HAVANA	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Heat, Ceilometer	Prod	Quantum is renamed to Neutron
Apr 2014	ICEHOUSE	All above, Trove	Prod	More focus on PaaS
Oct 2014	JUNO	All above, Sahara	Prod	
Apr 2015	KILO	All above, Ironic	Prod	
Oct 2015	LIBERTY	All above, Zaqar, Manila, Designate, Barbican, Searchlight	Prod	
Apr 2016	MITAKA	All above, Magnum	Prod	
Oct 2016	NEWTON	All above, aodh, cloudkitty, congress, freezer, mistral, monasca-api, monasca-log-api, murano, panko, senlin, solum, tacker, vitrage, watcher	Prod	Lots of new projects officially in the release.
Feb 2017	OCATA	All Above, Short Cycle, Stability improvements and other multi-cloud features, container projects	Prod	Current Release
Oct 2017	PIKE	TBA	Prod	Next Release
Apr 2018	QUEENS	TBA	Prod	

History of OpenStack – Release History



OpenStack Core Services (formerly called Projects)

NOVA

Compute



Manages the lifecycle of compute instances in an OpenStack environment. Responsibilities include spawning, scheduling and decommissioning of machines on demand.

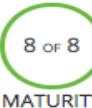
[MORE DETAILS](#)

NEUTRON

Networking



Enables network connectivity as a service for other OpenStack services, such as OpenStack Compute. Provides an API for users to define networks and the attachments into them. Has a pluggable architecture that supports many popular networking vendors and technologies.

[MORE DETAILS](#)

SWIFT

Object Storage



Stores and retrieves arbitrary unstructured data objects via a RESTful, HTTP based API. It is highly fault tolerant with its data replication and scale out architecture. Its implementation is not like a file server with mountable directories.

[MORE DETAILS](#)

CINDER

Block Storage



Provides persistent block storage to running instances. Its pluggable driver architecture facilitates the creation and management of block storage devices.

[MORE DETAILS](#)

KEYSTONE

Identity



Provides an authentication and authorization service for other OpenStack services. Provides a catalog of endpoints for all OpenStack services.

[MORE DETAILS](#)

GLANCE

Image Service



Stores and retrieves virtual machine disk images. OpenStack Compute makes use of this during instance provisioning.

[MORE DETAILS](#)



OpenStack Optional Services

NAME	SERVICE	MATURITY	AGE	ADOPTION
Horizon	Dashboard	6 of 8	5 Yrs	92 %
Ceilometer	Telemetry	1 of 8	4 Yrs	62 %
Heat	Orchestration	6 of 8	4 Yrs	66 %
Trove	Database	3 of 8	3 Yrs	17 %
Sahara	Elastic Map Reduce	3 of 8	3 Yrs	11 %
Ironic	Bare-Metal Provisioning	5 of 8	3 Yrs	25 %
Zaqar	Messaging Service	4 of 8	3 Yrs	2 %
Manila	Shared Filesystems	5 of 8	3 Yrs	11 %
Designate	DNS Service	3 of 8	3 Yrs	19 %
Barbican	Key Management	2 of 8	3 Yrs	5 %
Magnum	Containers	2 of 8	2 Yrs	13 %
Murano	Application Catalog	1 of 8	2 Yrs	12 %
Congress	Governance	1 of 8	2 Yrs	2 %



Complete List of OpenStack Projects/Services (Passed the TC)

1. [Barbican \(Key Manager service\)](#)
2. [Chef Openstack \(Chef cookbooks for deployment\)](#)
3. [Cinder \(Block Storage service\)](#)
4. [Cloudkitty \(Rating service\)](#)
5. [Congress \(Governance service\)](#)
6. [Designate \(DNS service\)](#)
7. [Documentation](#)
8. [Dragonflow](#)
9. [Ec2-Api \(EC2 API compatibility layer for OpenStack\)](#)
10. [Freezer \(Backup, Restore, and Disaster Recovery service\)](#)
11. [Fuel \(Deployment service\)](#)
12. [Glance \(Image service\)](#)
13. [Heat \(Orchestration service\)](#)
14. [Horizon \(Dashboard\)](#)
15. [I18n](#)
16. [Infrastructure](#)
17. [Ironic \(Bare Metal service\)](#)
18. [Karbor \(Data Protection Orchestration Service\)](#)
19. [Keystone \(Identity service\)](#)
20. [Kolla](#)
21. [Kuryr](#)
22. [Magnum \(Container Infrastructure Management service\)](#)
23. [Manila \(Shared File Systems service\)](#)
24. [Mistral \(Workflow service\)](#)
25. [Monasca \(Monitoring\)](#)
26. [Murano \(Application Catalog service\)](#)
27. [Neutron \(Networking service\)](#)
28. [Nova \(Compute service\)](#)
29. [Octavia \(Load-balancing service\)](#)
30. [Openstack Charms \(Juju Charms for deployment of OpenStack\)](#)
31. [Openstackansible \(Ansible playbooks and roles for deployment\)](#)
32. [Openstackclient \(Command-line client\)](#)
33. [Oslo \(Common libraries\)](#)
34. [Packaging-Deb](#)
35. [Packaging-Rpm](#)
36. [Puppet Openstack \(Puppet modules for deployment\)](#)
37. [Quality Assurance](#)
38. [Rally \(Benchmark service\)](#)
39. [Refstack \(Interoperability Test Report\)](#)
40. [Release Management](#)
41. [Requirements](#)
42. [Sahara \(Data Processing service\)](#)
43. [Searchlight \(Search service\)](#)
44. [Security](#)
45. [Senlin \(Clustering service\)](#)
46. [Shade \(Multi-cloud interoperability library\)](#)
47. [Solum \(Software Development Lifecycle Automation service\)](#)
48. [Stable Branch Maintenance](#)
49. [Storlets \(Compute inside Object Storage service\)](#)
50. [Swift \(Object Storage service\)](#)
51. [Tacker \(NFV Orchestration service\)](#)
52. [Telemetry \(Telemetry service\)](#)
53. [Tricircle \(Networking automation across Neutron service\)](#)
54. [Tripleo \(Deployment service\)](#)
55. [Trove \(Database service\)](#)
56. [Vitrage \(RCA \(Root Cause Analysis\) service\)](#)
57. [Watcher \(Infrastructure Optimization service\)](#)
58. [Winstackers](#)
59. [Zaqar \(Message service\)](#)
60. [Zun \(Containers service\)](#)



OpenStack for AWS Users

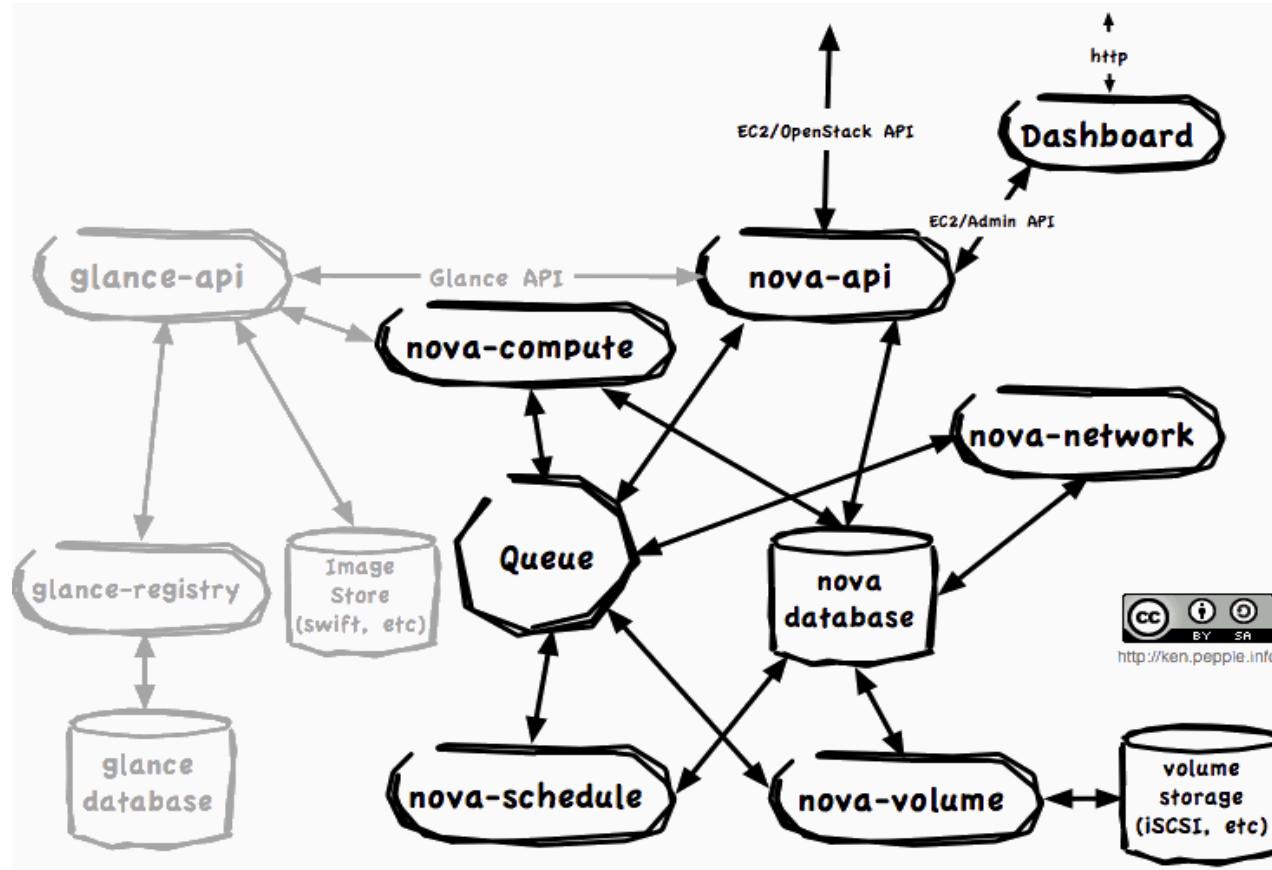


* Not an actual AWS User

OpenStack	AWS
Nova	EC2
Magnum/Murano	EC2 Container Service
Swift	S3
Trove	RDS
Keystone	IAM
Ceilometer	Cloudwatch
Heat	Cloudformation
Zaqar	SQS
Mistral	SWF
MagnetoDB	DynamoDB
VPNaaS (Neutron)	VPC
Horizon	AWS Management Console

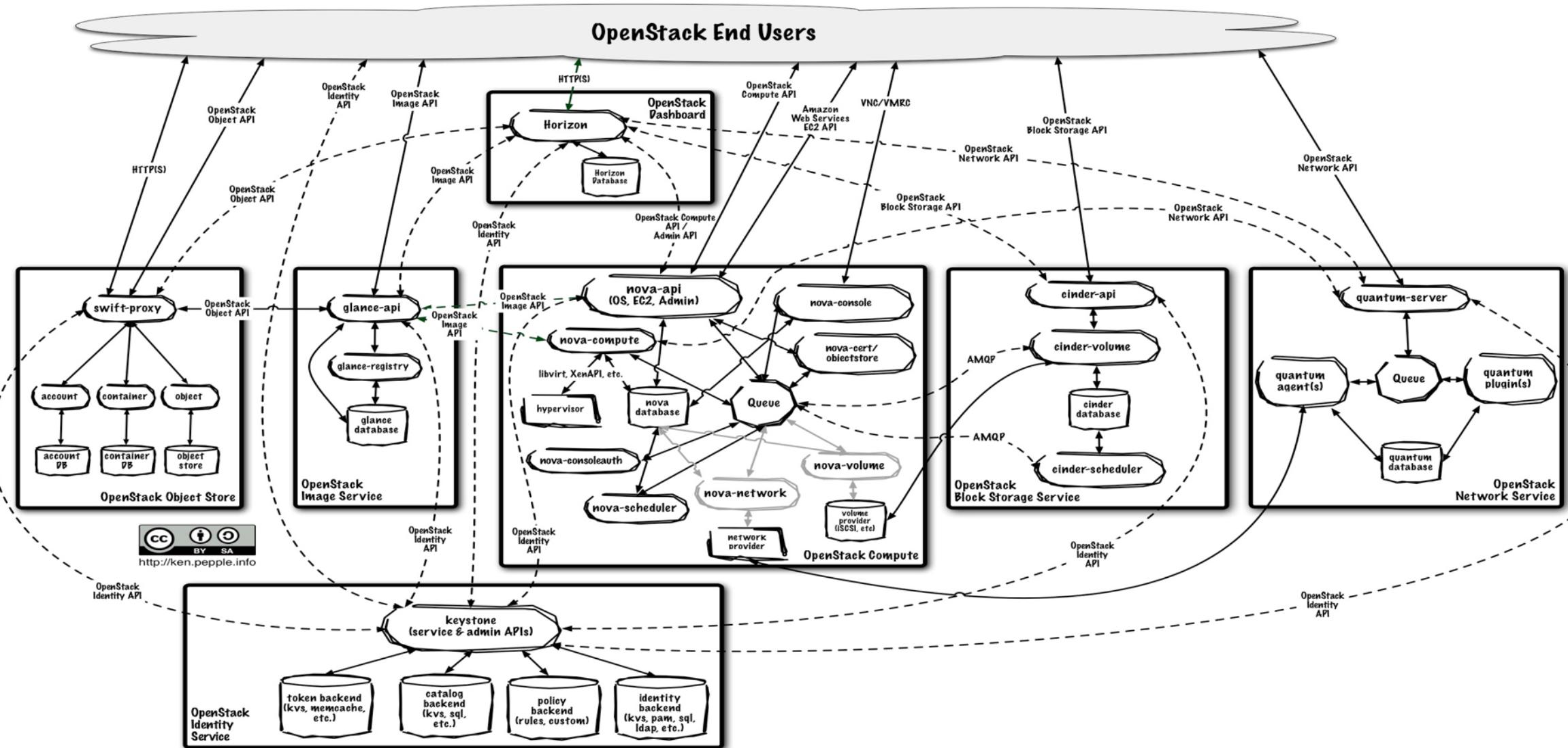


Historical Architecture of OpenStack – Year 1 (2010)



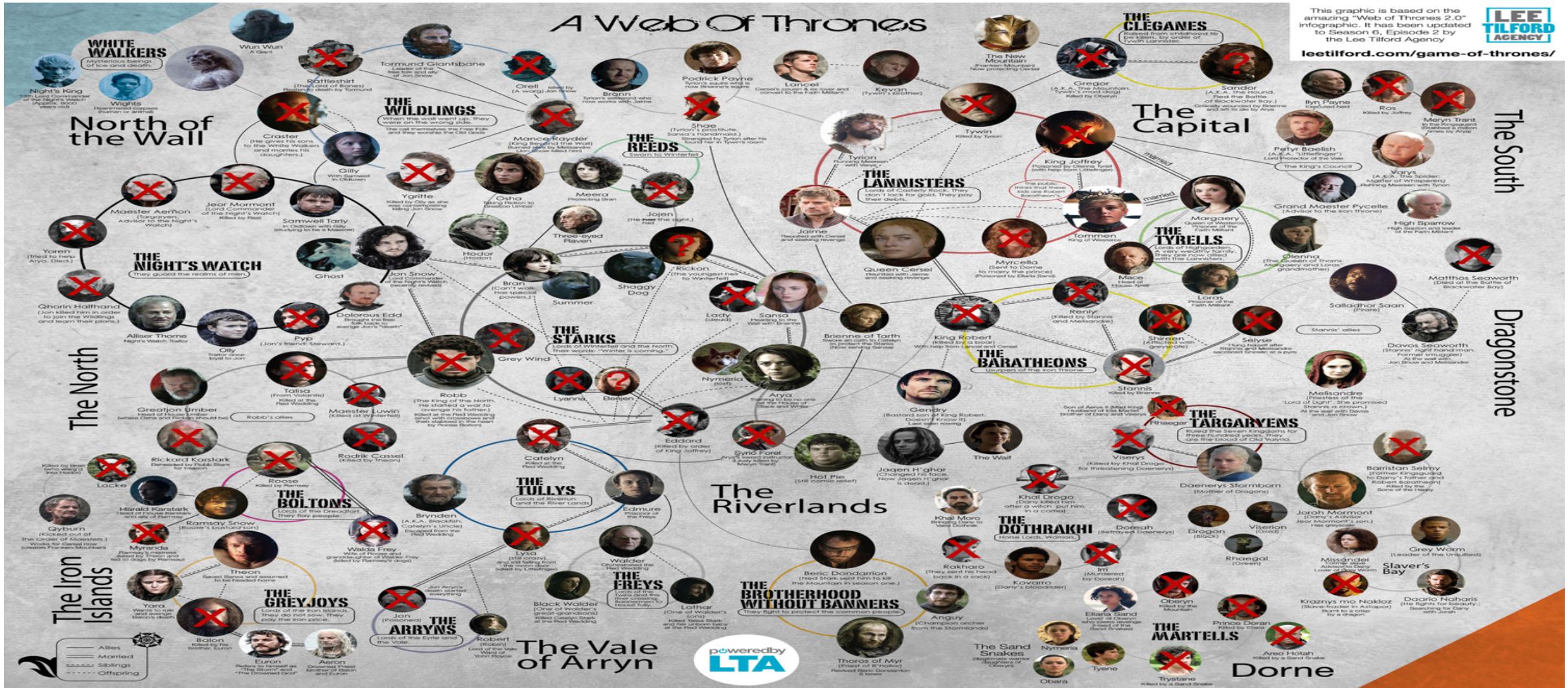


OpenStack Architecture - 2 years later



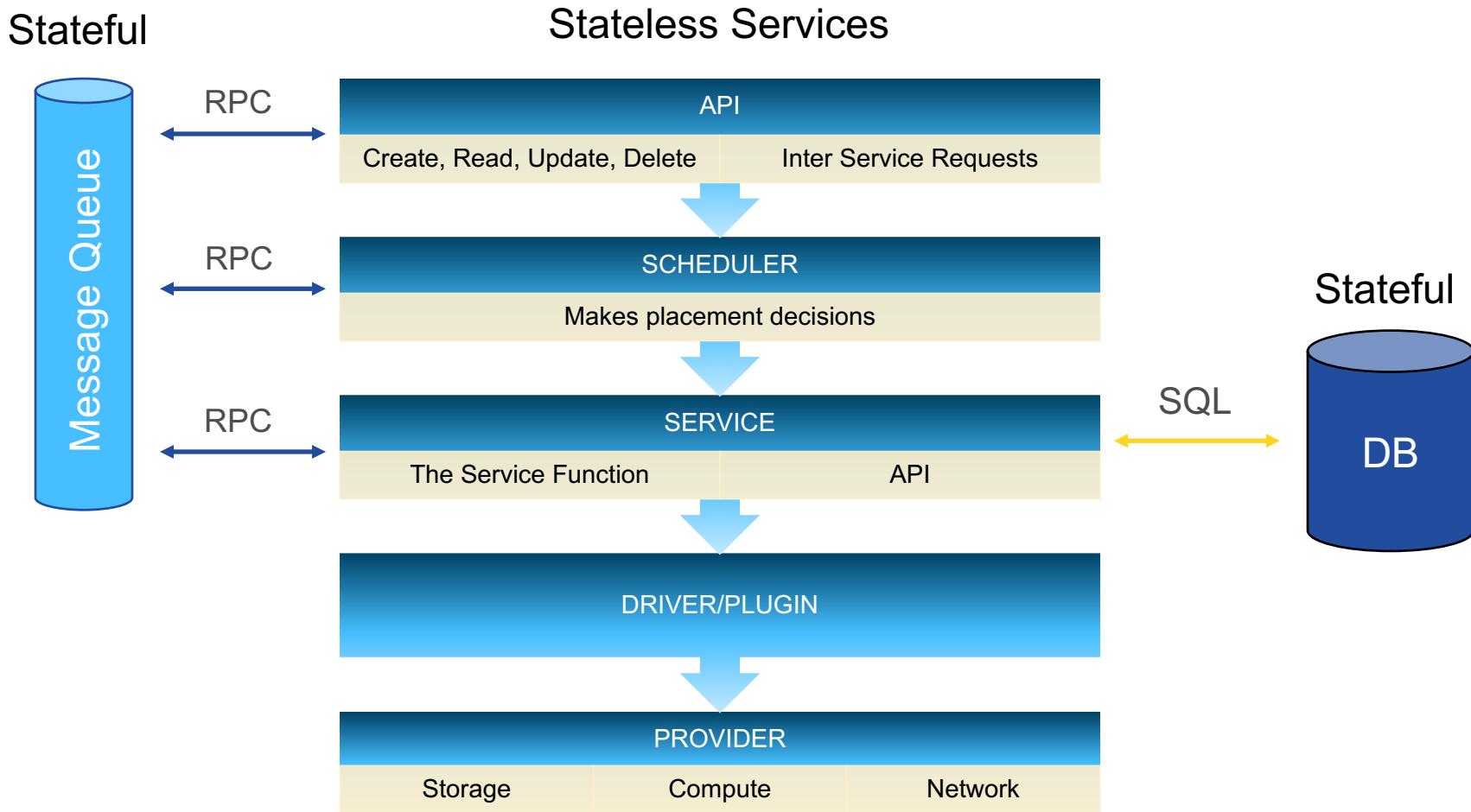


OpenStack Architecture - Today



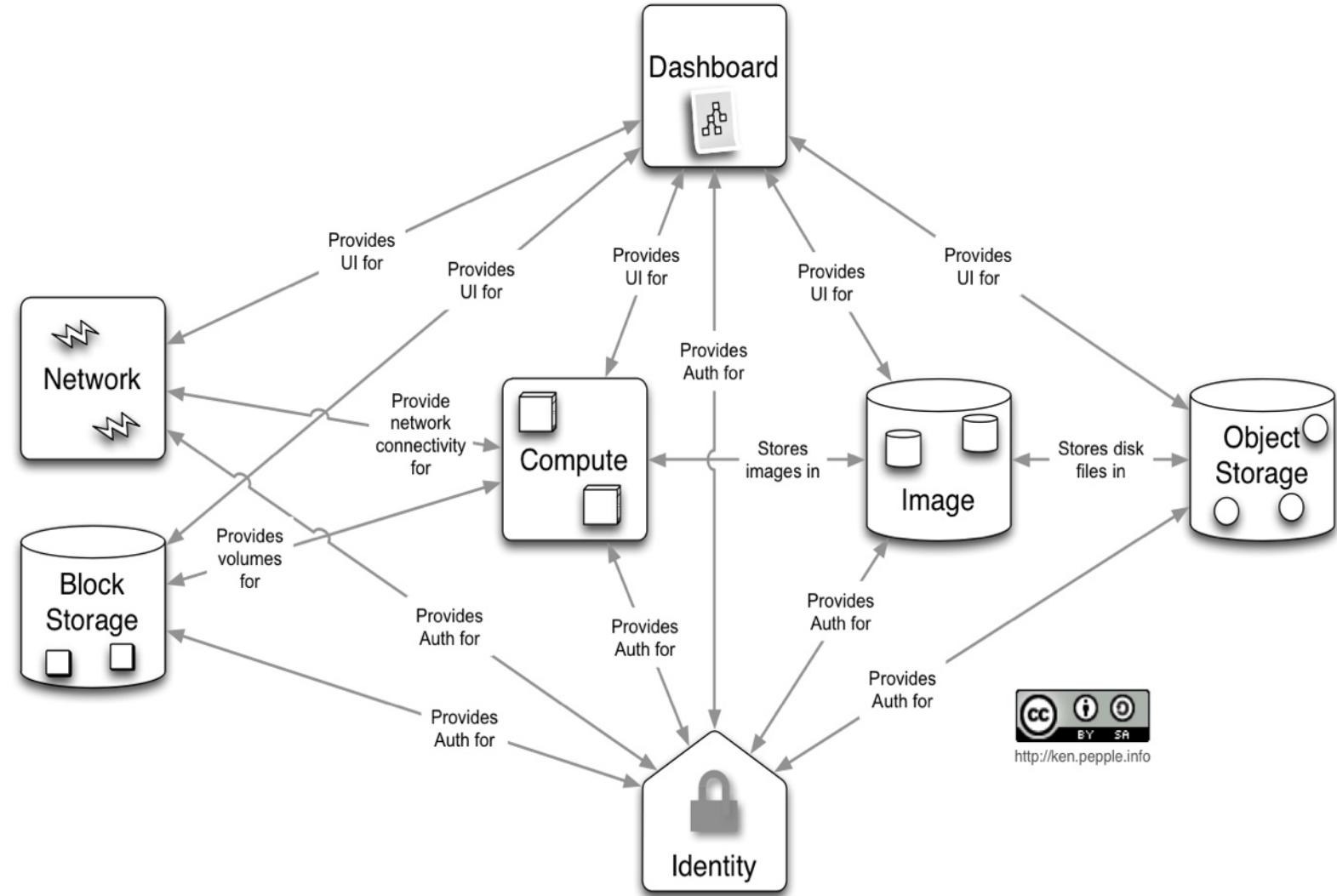


A Simple View of How OpenStack Services Work



OpenStack Basic VM Provisioning Flow in 10 Steps

1. Users log into **Horizon (Dashboard)** and initiate a VM create
2. **Keystone (Identity)** authorizes
3. **Nova API (Compute)** initiates provisioning and saves state to DB
4. **Nova (Scheduler)** finds appropriate host
5. **Neutron (Network)** configures networking
6. **Cinder (Block Storage)** provides block device
7. Image URI is looked up through **Glance (Image)**
8. Image is retrieved via **Swift (Object Storage)**
9. VM is rendered by **Hypervisor**
10. VM now accessible by the users



http://ken.pepple.info



OpenStack – Seriously, a lot of work to create!

Code Developers

6,612

Core Regular Casual

543 1,290 4,776

Code Submitters

6,806

Accepted Contributions

244,438

Launchpad Participants

14,106

Fixers Submitters

1,737 9,932

That's **3,716,027**
Lines of code to date!



StoryBoard Participants

773

Fixers Submitters

40 372

Mailing List Participants

6,841

Thread Initiators First
Repliers

5,340 5,186

IRC Participants

29,990

IRC Messages

7,541,456



In Review: What OpenStack Is, and Isn't

► OpenStack Is:

- A set of projects, not a product
- Allows users to develop and manage cloud infrastructure in a datacenter
- 6 core and 19 optional services with a total of 61 projects
- A bubbling bazaar of collaboration from 589 companies and 6,806 programmers and 44k members
- Supported by the non-profit OpenStack Foundation
- Used in 177+ countries
- Supported by 585 companies and almost 40,000 active contributors

► OpenStack Isn't (YMMV):

- Not VMware (or a free replacement) it's more like AWS than anything else
- Not crippleware, beta version, standard version or even shareware. It's FLOSS
- Not a single distribution, there are multiple vendors of supported distributions
- Not a standalone network or storage platform
- Not a single architecture, a fully flexible platform



OpenStack - Summit and Updates

What is the OpenStack Summit?

- ▶ A three-day conference for IT business leaders, cloud operators and developers covering the open infrastructure landscape.
- ▶ User and Operator-centric summit where enterprise OpenStack Operators can come and hear about the latest trends, updates and success stories about the OpenStack platform.
- ▶ Over 750 sessions are held during the 3 day conference and are broken up by keynotes and breakout tracks.
- ▶ Used to also be a summit for the OpenStack development community but due to massive growth there is now a separate summit every 6 months called the Project Teams Gathering that attracts all of the OpenStack developers.



OpenStack - Summit and Updates

What's New with the OpenStack Foundation?

- ▶ Making OpenStack easier for customers to consume and operate.
- ▶ Making OpenStack easier to architect for on-premise clouds.
- ▶ Live interview with a special guest!



OpenStack Summit Updates

Making OpenStack Easier to Consume and Operate – New Project Navigator and Managed Offerings



MIRANTIS MANAGED OPENSTACK

Mirantis Managed OpenStack enables you to focus on your business while we focus on OpenStack. Our unique delivery model includes operational and SLA monitoring, automated deployment, scaling, and failover, and CI/CD for Infrastructure as Code.

 TESTED *OpenStack Powered Platform 2016.08*

DETAILS 



PLATFORM9 MANAGED OPENSTACK

Platform9's open source-as-a-service model delivers OpenStack and Kubernetes as SaaS, giving customers a fast and easy to run hybrid clouds across any infrastructure and achieve instant time to value with enterprise scale.

 TESTED *OpenStack Powered Compute 2017.01*

DETAILS 

- ▶ Remotely Managed Private Cloud Opening in the Marketplace
- ▶ Currently offered by 10 different vendors: Canonical, EasyStack, Aptira, Cisco, IBM, Mirantis, Platform9, RackSpace and UnitedStack.
- ▶ Many existing use cases of companies are already using the managed consumption model.
- ▶ During the summit the Foundation introduced managed hosting consumers GE Healthcare, Chemical Abstract Service and Tele2 as new faces to the managed model.



OpenStack Summit Updates

NEW Project Navigator - Making OpenStack easier to architect for on-premise clouds.

 **NOVA**
Compute Service
[Project wiki page](#)
[View the install guide](#)
[Find this service in the Marketplace](#)



About this project

To implement services and associated libraries to provide massively scalable, on demand, self service access to compute resources, including bare metal, virtual machines, and containers.

Project details

MATURITY INDICATORS	TAG DETAILS
95% of deployments using this project in production environments. ⓘ	View Details
17 software development kits (SDKs) support Nova	View Details
✓ Nova is included in the install guide.	View the install guide
✓ Nova team has achieved corporate diversity ⓘ	View details
✓ Nova is maintained following the common Stable branch policy	View details
✓ Nova follows standard deprecation ⓘ	View details
✓ Nova supports minimal cold (offline) upgrade capabilities ⓘ	View details

For more information see: <https://www.openstack.org/software/releases/ocata/components/nova>

- ▶ Brand new look with each user facing service separated into its own page.
- ▶ Sample configurations
- ▶ New mascot logos!
- ▶ Allows users to dig deep into each service to get project details, information, and maturity information.
- ▶ Update and contributor information.
- ▶ API version history
- ▶ Project Team Leader information



OpenStack Summit Update

Project Navigator

LIST VIEW TILES VIEW

Compute (6 Results)

	NOVA	Compute Service
	GLANCE	Image Service
	IRONIC	Bare Metal Provisioning Service
	MAGNUM	Container Orchestration Engine Provisioning
	STORLETS	Computable Object Store
	ZUN	Container Management Service

Storage, Backup & Recovery (5 Results)

	SWIFT	Object Store
	CINDER	Block Storage
	MANILA	Shared Filesystems
	KARBOR	Application Data Protection as a Service
	FREEZER	Backup, Restore, and Disaster Recovery

Networking & Content Delivery (7 Results)



OpenStack Summit Update

Project Navigator – Project Details



NOVA
Compute Service

[Project wiki page](#)
[View the install guide](#)
[Find this service in the Marketplace](#)


95% Adoption
7 of 7 Maturity
7 yrs Age

[What does this mean?](#)

About this project
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✓ Nova follows standard deprecation ⓘ	View details
✓ Nova supports minimal cold (offline) upgrade capabilities ⓘ	View details
✓ Nova supports minimal rolling upgrade capabilities ⓘ	View details



OpenStack Summit Update

Project Navigator – Project Details Cont.

Contributions to Nova

The chart displays the volume of contributions made to the Nova project over a period of approximately 15 months. The data shows a relatively stable flow of contributions, with occasional peaks and troughs. Notable spikes occur around October 2016, January 2017, and March 2017.

Month	Contributions (approx.)
Jun '16	100
Jul '16	150
Aug '16	100
Sep '16	100
Oct '16	100
Nov '16	100
Dec '16	100
Jan '17	100
Feb '17	100
Mar '17	100
Apr '17	100
May '17	100
Jun '17	100

PTL for Latest Release

Matt Riedemann
Huawei, Principal Architect

I have over 13 years of software development experience working on various projects and technologies. I have 10 years of Java experience and 4 years of Python, with random other languages and tools used throughout my career (XML, JSON, SQL, Eclipse/OSGi, CIM, BASH, Ant, Maven, RPM, Jenkins, Gerrit, Git). My development roles have all included working on teams which also included remote employees and global teams. I also have years of experience as a technical lead managing projects, both within IBM and in the open source OpenStack community. My main focus the last several years has been working on the open source OpenStack Nova (compute) project. I'm consistently a top contributor from IBM to OpenStack, am a core reviewer on several projects in OpenStack, and am the Nova project technical lead (PTL) for the Newton, Ocata and Pike releases.

Presentations:

<https://www.openstack.org/summit/vancouver-2015/summit-videos/presentation/tales-from-the-gate-how-debugging-the-gate-helps-your-enterprise>
<https://www.openstack.org/videos/video/openstack-stable-what-it-actually-means-to-maintain-stable-branches>

Project Update - Nova

Join the Project Team Leader of Nova and core contributors for a "project update" reflecting current developments in the Pike cycle and discussion of future development activity. We dig into major issues and user needs, and how those needs can be addressed in current and future development. We also discuss hot topics from the Project Teams Gathering, and major development decisions agreed by the team. Get an in-depth look at the top features and enhancements Nova plans to deliver in the Pike release.



Project Navigator – Review

- ▶ Provides guidance on how to consume OpenStack software
- ▶ Projects are sorted by functional groups
- ▶ Lists Project Team Lead and top contributors by company and individuals
- ▶ Links to update information and API references



OpenStack Summit Updates

Live Interview with Edward Snowden, direct from Russia



- ▶ In regards to public cloud: “*The problem is that they are fundamentally disempowering. You give them money and in exchange you’re supposed to be provided with a service. But you’re providing more than money: you’re also them providing with data and you’re giving up control...*”
- ▶ “*So many users are sinking cost in to infrastructure that is not theirs, and they are giving up data and information about themselves without thinking.*”
- ▶ “*When Apple has a security flaw, or Google, or Amazon’s stack has something, we don’t know what they learn, we can’t evaluate if their response was good enough. And ultimately, if we don’t like it we have no influence over it.*”

For more information see: <http://superuser.openstack.org/articles/snowden-interview-openstack-summit/>



OpenStack Summit Updates

Some new cool production OpenStack clouds

- ▶ United States Army Cyber School
- ▶ Gap Inc.
- ▶ New Superuser Winners: Paddy Power Betfair and UKCloud
- ▶ Verizon's CPE solution
- ▶ SkyTV
- ▶ ...and more



OpenStack Summit Updates

Some new cool production OpenStack clouds



US Army Cyber School

- Started with 40 cores on borrowed servers backed by 10TB and a single LTE connection
- Now 2000 cores and 36TB of RAM running on 4PB of Ceph and attached to a 1GB network.
- Everything as code, full CI development chain



Gap Incorporated

- 90% of customer facing applications are running on OpenStack.
- Four person team runs five clouds.



Verizon

- Cloud in a box system – IE: CPE to deploy SD WAN
- OpenStack for edge computing!
- Also has many large OpenStack clouds internally



Sky TV

- True Hybrid Cloud Platform
- Already had an AWS pipeline for public facing
- Integrated OpenStack into almost the same pipeline
- Used S3/Swift and Heat/AWS Codedeploy to keep operations standard



OpenStack Summit Updates

Project Updates – Core Services

Nova – Compute Service (98% of clouds in prod)

- **VM placement changes:** The Nova filter scheduler will now use the [Placement API](#) to filter compute nodes based on CPU/RAM/Disk capacity.
- **High availability:** Nova now uses Cells v2 for all deployments; currently implemented as single cells, the next release, Pike, will support multi-cell clouds.
- **Neutron** is now the default networking option.
- **Upgrade capabilities:** Use the new ‘nova-status upgrade check’ CLI command to see what’s required to upgrade to Ocata.



Cinder – Block Storage Service (88% of clouds)

- **Active/Active HA:** Cinder can now run in Active/Active clustered mode, preventing concurrent operation conflicts. Cinder will also handle mid-processing service failures better than in past releases.
- **New attach/detach APIs:** If you’ve been confused about how to attach and detach volumes to and from VMs, you’re not alone. The Ocata release saw the Cinder team refactor these APIs in preparation for adding the ability to attach a single volume to multiple VMs, expected in an upcoming release



Neutron – Networking Service (93% of clouds)

- **Support for Routed Provider Networks in Neutron:** You can now use the NOVA GRP (Generic Resource Pools) API to publish networks in IPv4 inventory. Also, the Nova scheduler uses this inventory as a hint to place instances based on IPv4 address availability in routed network segments.
- **Resource tag mechanism:** You can now create tags for subnet, port, subnet pool and router resources, making it possible to do things like map different networks in different OpenStack clouds in one logical network or tag provider networks (i.e. High-speed, High-Bandwidth, Dial-Up).



Keystone – Authentication Service (96% of clouds)

- **Per-user Multi-Factor-Auth rules (MFA rules):** You can now specify multiple forms of authentication before Keystone will issue a token. For example, some users might just need a password, while others might have to provide a time-based one time password and an additional form of authentication.
- **Auto-provisioning for federated identity:** When a user logs into a federated system, Keystone will dynamically create that user a role
- **Validate an expired token:** Finally, no more failures due to long-running operations such as uploading a snapshot. Each project can specify whether it will accept expired tokens, and just HOW expired those tokens can be.

<https://www.mirantis.com/blog/53-new-things-to-look-for-in-openstack-ocata/>



OpenStack Summit Update

Other Projects



Glance – Image Service

- **Image visibility:** Users can now create “community” images, making them available for everyone else to use. You can also specify an image as “shared” to specify that only certain users have access.



Ceilometer – Telemetry Service

- **Better instance discovery:** Ceiometer now uses libvirt directly by default, rather than nova-api.



Trove – Database as a Service

- **Multi-region deployments:** Database clusters can now be deployed across multiple OpenStack regions.



Heat – Orchestration Service

- **Notification and application workflow:** Use the new OS::Zaqar::Notification to subscribe to Zaqar queues for notifications, or the OS::Zaqar::MistralTrigger for just Mistral notifications.



Barbican – Key Manager Service

- **Testing:** Barbican now includes a new Tempest test framework.



Horizon – Dashboard Service/Interface

- **Easier profiling and debugging:** The new Profiler Panel uses the os-profiler library to provide profiling of requests through Horizon to the OpenStack APIs so you can see what's going on inside your cloud.



Kubernetes and OpenStack – The dominant theme this summit

▶ What is Kubernetes?

- **Kubernetes** is an open-source system for automating deployment, scaling, and management of containerized applications. It groups containers that make up an application into logical units for easy management and discovery.
- It's all about container management! It's just a container scheduler/orchestrator.
 - Deploy your applications quickly and predictably.
 - Scale your applications on the fly.
 - Roll out new features seamlessly.
 - Limit hardware usage to required resources only.
- Portable, Extensible, Self-Healing

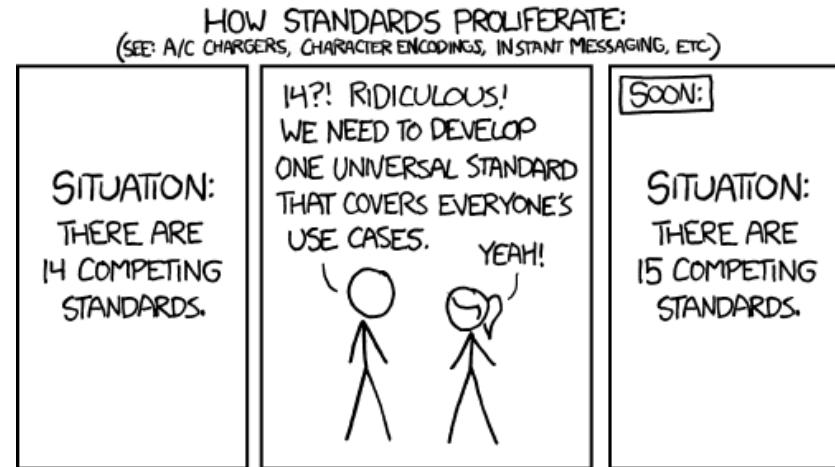
<https://kubernetes.io/docs/concepts/overview/what-is-kubernetes/>



OpenStack Summit Update

Kubernetes and OpenStack

- ▶ So what does this have to do with OpenStack?
- ▶ OpenStack becoming more Operator-centric
 - Hiding the complexity of the IaaS platform from Operations
 - Upgrades are a key point
 - Standardizing operational practices on install and upgrade
- ▶ How can we do this?
- ▶ Why would we do this?
- ▶ Aren't people already containerizing the OpenStack control plane?



- ▶ So how is the Kubernetes design different?
- ▶ Are there any community problems for this approach?
- ▶ What are the technical challenges?
 - Docker Compose
 - Helm

<https://kubernetes.io/docs/concepts/overview/what-is-kubernetes/>

On 

Questions?





Thank You

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