Future of OpenStack
Looking Forward to 2019

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What and Why OpenStack

• OpenStack is an open source software platform for cloud computing. Mostly deployed as infrastructure-as-a-service (IaaS), whereby virtual servers and other resources are made available to customers.

• Manages multi-vendor hardware pools of processing, storage and networking resources throughout a data center(s).

• Managed through a web-based dashboard, command-line tools, or via RESTful web services.

• Promotes IT as a Service

• Promotes self service, agility, accountability, reliability,…
“Today, [OpenStack’s] a stable system that’s the de facto standard for running private clouds. There’s very little hype, but now there’s lots of actual usage….OpenStack users now use the system to manage well over 10 million cores of compute power.” —Frederic Lardinois, TechCrunch (US)
“The numbers speak for themselves: More than 50% of the Fortune 100 use OpenStack,… And a third of global enterprise infrastructure decision makers see expanding the use of open source as a critical or high priority.”

—Forrester, "The I&O Pro’s Guide to Enterprise Open Source Cloud Adoption, Q1 2018," March 2018
70,000 CHANGES IN THE LAST YEAR

Average of 182 changes/day during Rocky cycle
OSF Community Growth

Key stat: 33% increase in community members YoY
Train

The next release of OpenStack

Community goals under discussion:

• Improved cloud reliability by:
  - Testing
  - Reporting
  - Self consistency enforcement
  - Health checks for clusters in operation

• API consistency

• Supported Runtimes
  - Python 3 support completion
    • Removal of Python 2
  - Golang

• Upgradability
  - Consistent component and associated resources removal
Technical Vision

Cloud computing promotes more efficient utilization of resources by reducing the transaction costs involved in provisioning and de-provisioning infrastructure to near zero, and it is able to do so because it differs in qualitative ways from previous models of computing (including virtualization).

- Clouds are self-service
- Clouds allow control of an application’s infrastructure to be vested in the application itself.

There will be many Clouds

- Interoperability
- Bidirectional compatibility (older and newer)
- Reuse functionality as a user benefit
- Allow operators to create arbitrary, hierarchical resource groupings
Technical Design

Services provided to applications and users

- No required layer underneath OpenStack
  - Provide the tools to operate a data center and make its resources available to consumers.
- Play well with others; Encourage additional layers of abstraction
  - PaaS, SaaS, Serverless, Container Orchestration Engines, Standalone entities, External services,…
- Software-defined allocation of resources
  - Virtual servers, storage, routers, load balancers, firewalls, HSMs, GPGPUs, FPGAs, ASICs (e.g. video codecs), and so on.
- Infinite, continuous scaling
- Allow developers to build reliable applications
- Secure, customizable integration
- Abstract specialized operations
- Visual workflows affords discovery
How This Fits with Everything Else

- OpenStack can help you manage the changing demands on your organisation
- Whether you need to deliver cloud Native, Virtualised or traditional services
Trend: OpenStack adoption is growing

75% of OpenStack Clouds Are On-Premises Private Cloud

Globally, 71% of service providers are either in production or plan to be in production with OpenStack in the next 12 months. That number goes up to 80% if you include respondents who plan to implement in the next 24 months.

There are 10+ million computing cores running OpenStack globally, according to the latest OpenStack User Survey. And we’re continuing to grow in non-IT industries—financial services (now comprising 9% of deployments), retail/e-commerce (5%) and government/defense (6%).
Trend: Hybrid cloud

"By 2020, 75% of enterprises using public cloud will also use an enterprise private cloud platform; the majority of these platforms will support delivery of higher-layer PaaS and SaaS functionalities." - IDC

There are 21 OpenStack public providers that span 75 data centers across over 20 countries.

Managed and hosted private clouds are increasingly popular models
Trend: OpenStack Bare Metal Clouds for Container-based Workloads

OpenStack delivers a **cloud provider for Kubernetes** in the same way AWS, GCE and Azure offer cloud providers for Kubernetes.

**OpenStack is currently tested in the same CNCF cross-cloud dashboard as the hyperscale public clouds**, illustrating the different roles in the landscape.

OpenStack **Magnum was recently certified as a Kubernetes Installer**, demonstrating the relationship between the two technologies.

In production deployments, **OpenStack Ironic adoption has increased from 9% in 2016 to 24% in 2018**. When looking at OpenStack deployments running Kubernetes specifically, Ironic bare metal adoption increases to 37%, compared to 24% amongst the general population.
Trend: Edge computing driving open source

Edge computing is an emerging model for OpenStack and open infrastructure.

Three examples were featured at the Berlin Summit are AT&T, Verizon and new user Oerlikon, who is bringing OpenStack to the textile factory floor.

StarlingX delivered its first release October 2018 to support high performance, ultra-low latency applications at the edge.
Expansion Beyond Features

Software Defined Infrastructure

- Increase Agility
- Service Customers Better
- Deliver New Offerings Faster
- Drive Efficiency

- Analyze data stored in the cloud
- Network for specific needs and use cases
- Multi-cloud interoperability
- Improve developers lives
- Seamless customer experience

Data Center(s) Expansion
Adjacent Technology Integration
Container Infrastructure
CI/CD Automation
Edge Computing

Open Infrastructure
OpenStack Foundation Strategic Focus Areas

Shared:
- Technologies
- Contributors
- Users
- Ecosystem
Open Infrastructure Markets (SFAs)

Continue to applying the 4 steps to integration across these markets:
• Datacenter
• CI/CD
• Container Infrastructure
• Edge Computing

And consider for 2019:
• AI / Machine Learning
Why AI / Machine Learning?

4 Steps to integration are ramping up:
1. Use cases becoming clear - AI-augmented ops for infrastructure
2. Collaborating across communities: Tensorflow, Caffe 2, Kubeflow
3. New Technology:
   a. Nova support for vGPUs
   b. Cyborg support for GPUs & FPGAs
   c. Future: Tighter integration between Nova & Cyborg, and Kubeflow
4. Test everything: adding GPU support to openstack infra (via Zuul) now, FPGAs in the future
## OSF Strategic Project Governance

<table>
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<tr>
<th>18-month Incubation</th>
<th>Long Term</th>
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<tr>
<td>PILOT PROJECT</td>
<td>CONFIRMED PROJECT</td>
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- Relevant to Open Infrastructure mission
- Desire to follow 4 Opens
- OSI-approved license
- Selected by Foundation Staff
- Long-term investment & support by Foundation
- Established Open Governance
- Delivered ≥ 1 release
- Voted by the BoD
Pilot projects enable Open Infrastructure, support OpenStack

- New contributors, building relationships across communities
- Lifting the tide of the Open Infrastructure brand and movement
- Summits become center of gravity for open infrastructure
The OpenStack Summit's new name

OPEN INFRASTRUCTURE SUMMIT

Denver, CO | April 29–May 1, 2019

Project Teams Gathering colocated with the Summit | May 2–4
The OpenStack Summit’s new name

OPEN INFRASTRUCTURE SUMMIT

Shanghai | Week of November 4, 2019

Project Teams Gathering