# RED HAT OPENSTACK PLATFORM
# Leading OpenStack to success

**Mark McLoughlin**
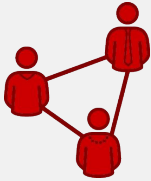Sr Director of Engineering - OpenStack
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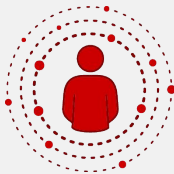Sr Director Product Management - OpenStack
nijaba@redhat.com
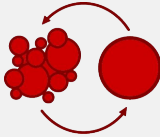
May 3rd 2017

# FROM UPSTREAM TO DOWNSTREAM

# OPEN SOURCE CULTURE

Collaboration

Transparency
(both access and the ability to act)

**1,000,000+ PROJECTS***

Shared problems are solved faster
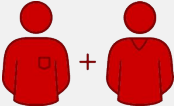
Working together creates standardization

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# PRODUCT DEVELOPMENT MODEL

**1,000,000+ PROJECTS***

### PARTICIPATE

We participate in and create community-powered upstream projects.

### INTEGRATE

We integrate upstream projects, fostering open community platforms.

### STABILIZE

We commercialize these platforms together with a rich ecosystem of services and certifications.

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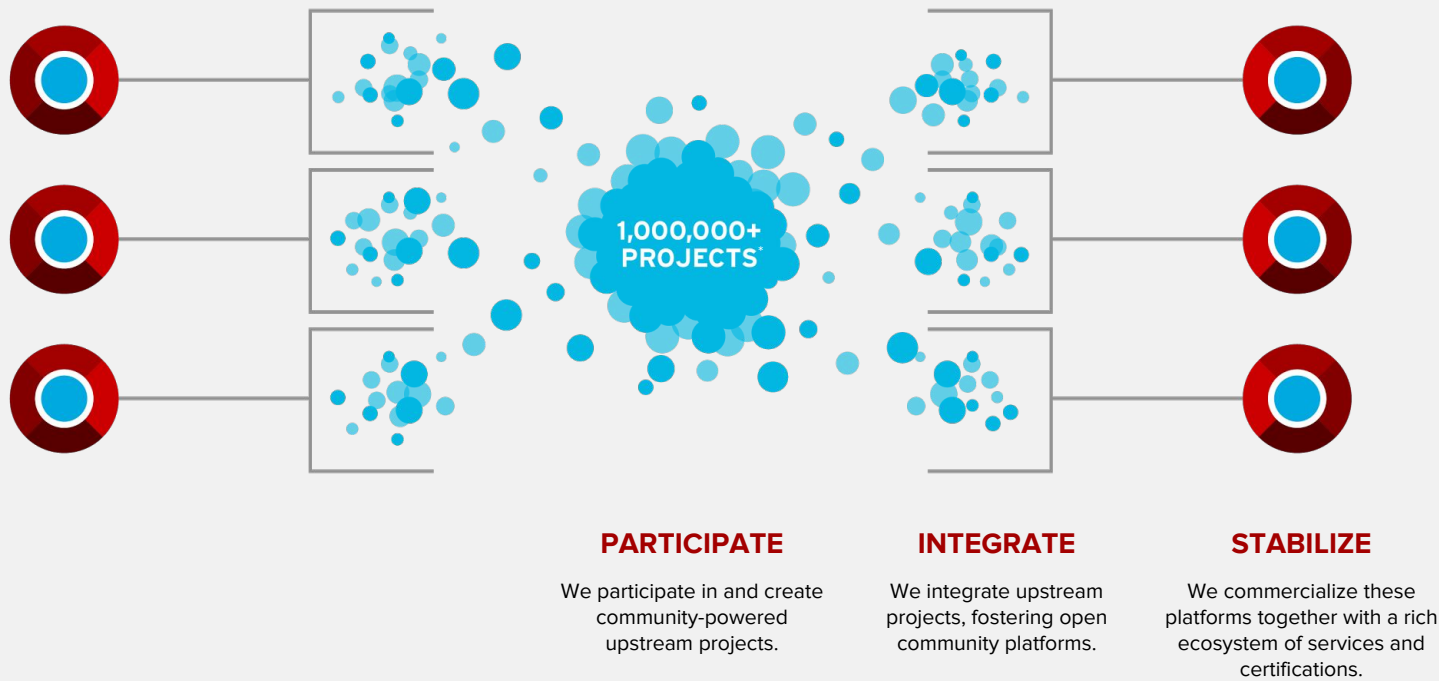
# FROM COMMUNITIES TO ENTERPRISE



RED HAT ENTERPRISE LINUX

RED HAT VIRTUALIZATION

RED HAT OPENSTACK PLATFORM

RED HAT ENTERPRISE LINUX ATOMIC HOST

RED HAT STORAGE

RED HAT SATELLITE

fedora

oVirt

RDO

PROJECT ATOMIC

GLUSTER    ceph

FOREMAN

The Apache Software Foundation    PATTERNFLY

1,000,000+ PROJECTS*

CentOS    openstack CLOUD SOFTWARE

JBoss Community
Apache Camel

FEEDHENRY

OPENSHIFT origin

ManageIQ

ANSIBLE

RED HAT JBOSS MIDDLEWARE

RED HAT MOBILE

RED HAT OPENSHIFT

RED HAT CLOUDFORMS

ANSIBLE by Red Hat

RH0064-3

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# PRODUCTION CHAIN

Gating CI → Upstream Code → DLRN → RDO Repo → TripleO CI → RDO CI

RDO Internal CI ⤑ Import to OSP → OSP Repo → Phase 1 CI → Phase 2 CI

Phase 1 CI → DCI

Phase 2 CI → CDN

Manual = ⤑
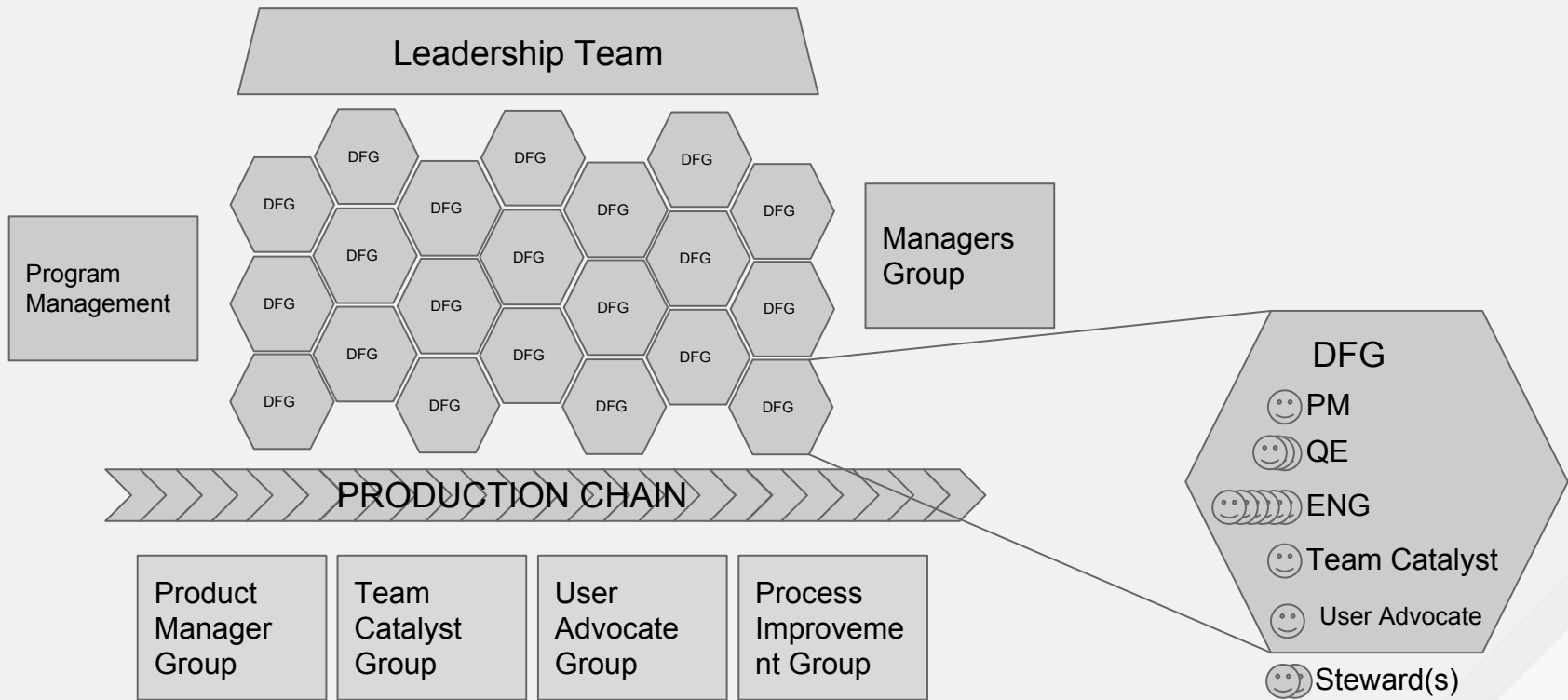Automated = →
SemiAuto = ⤕

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# PRODUCTION CHAIN

**Vision: Product GA as close as possible to the Upstream GA**

- Shorten the feedback loop with upstream development
    - No backporting
    - Involve partners in testing during development (DCI)
    - Be influential upstream
    - Automate, automate, automate...
- Simplification of our processes
- Ensuring we maximise the upstream development window

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# Organisational Structure

**Leadership Team**

**Program Management**

DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG DFG

**Managers Group**

**PRODUCTION CHAIN**

**Product Manager Group**

**Team Catalyst Group**

**User Advocate Group**

**Process Improvement Group**

### DFG

☺ PM

☺ QE

☺ ENG

☺ Team Catalyst

☺ User Advocate

☺ Steward(s)

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# What is a Delivery Focused Group?

Delivery Focused Groups

- "End-to-end" responsibility for a particular aspect of the product
- Self-sufficient with the skills and resources
- Single self prioritized backlog of work
- Cross Functional Teams
- Self Organised
- Multiple components/projects

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# CULTURE
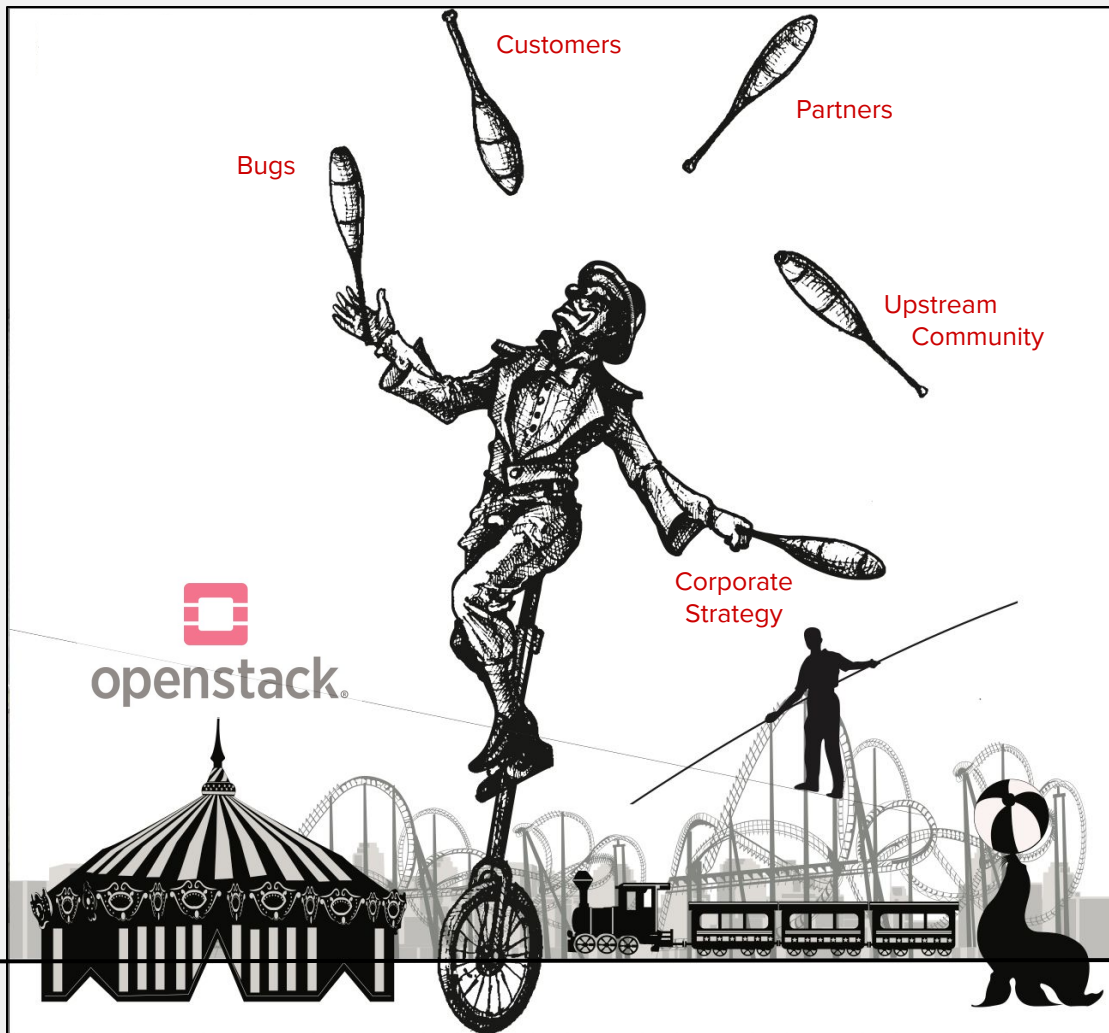
# FROM REQUIREMENTS TO PRODUCT

OpenStack
#pmLIFE

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# REQUIREMENTS

Requirements sourcing

- Customers
- Bugs
- Partners
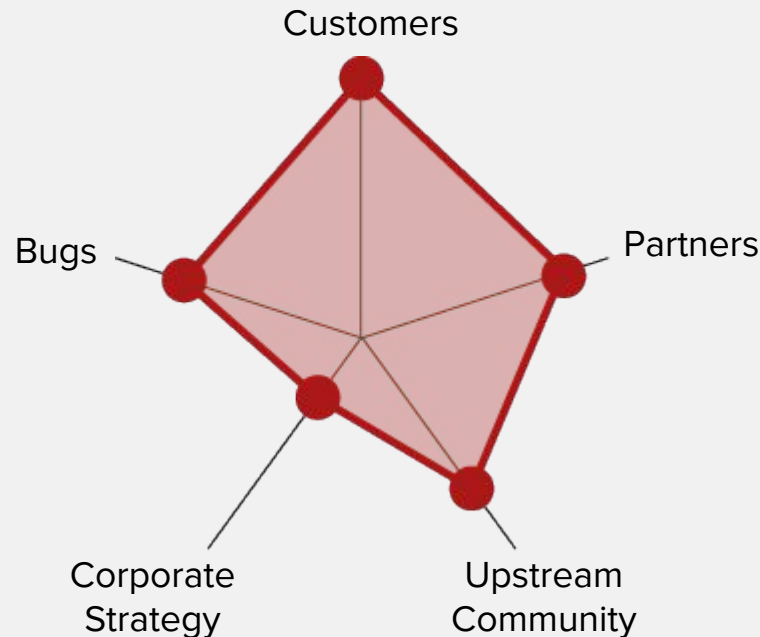- Upstream community
- Corporate strategy

# INFLUENCES

Champion, Advocate, Communicator

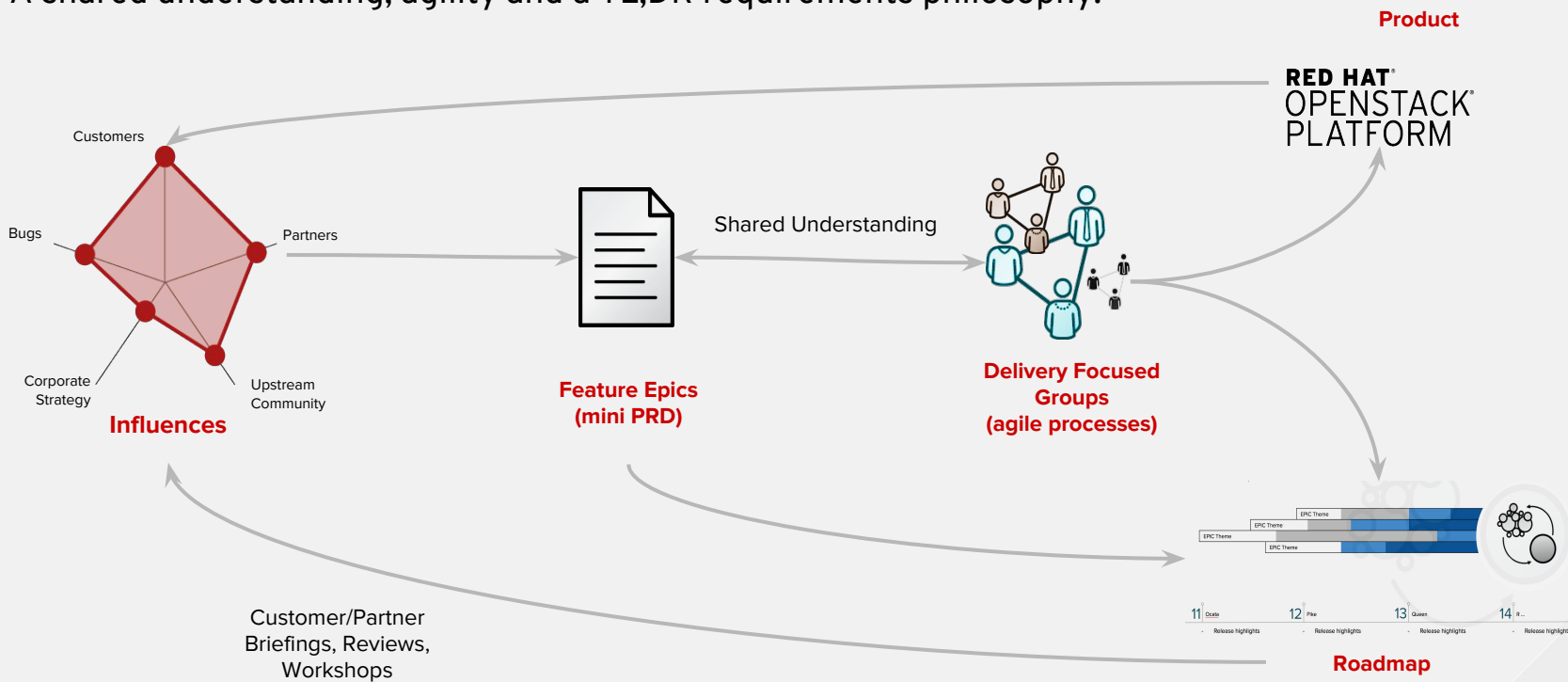What PM engagement looks like:

- Upstream
  - Summits, mid-cycles, meetups
  - We advocate for the customer, partner and strategy

- Downstream
  - We advocate for the community
  - We sometimes say No!

**Influence Mapping**

# COPING WITH SPEED & COMPLEXITY

A shared understanding, agility and a TL;DR requirements philosophy.

**Product**

RED HAT®
OPENSTACK®
PLATFORM

Customers

Bugs

Partners

Corporate
Strategy

Upstream
Community

**Influences**

**Feature Epics
(mini PRD)**

Shared Understanding

**Delivery Focused
Groups
(agile processes)**

EPIC Theme
EPIC Theme
EPIC Theme
EPIC Theme

11 | Ocata      12 | Pike      13 | Queen      14 | R...
- Release highlights  - Release highlights  - Release highlights  - Release highlights

**Roadmap**

Customer/Partner
Briefings, Reviews,
Workshops

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# Communicating Complexity: Tooling Example

# Breaking Down the "Thai Flute" Roadmap

Epic maturity legend:
- □ - early
- ▨ - partial
- ▨ - good
- ▨ - strong

Each **bar** in the flute represents an Epic. Within the bars are **colors** that represent the **maturity of the features** we intend to deliver in that epic.

EPIC Theme

EPIC Theme

EPIC Theme

EPIC Theme
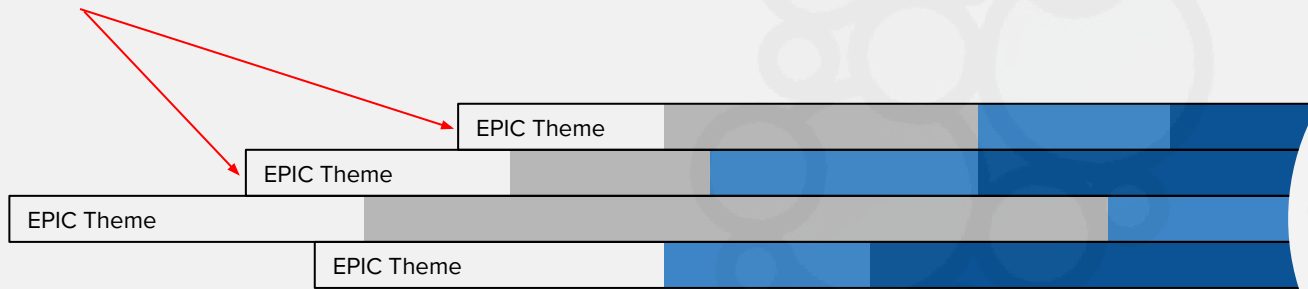
**Bars** and their **maturity levels** are positioned against the OSP release time line below. Together, we can easily see **epic, feature and delivery projections**.

| 11 Ocata | 12 Pike | 13 Queen | 14 R … |
|----------|---------|----------|--------|
| - Release highlights | - Release highlights | - Release highlights | - Release highlights |

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# FROM WISH TO REALITY

# OPENSTACK PRODUCT STRATEGY

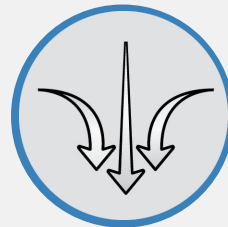Stable, production-ready release co-engineered with RHEL

Enterprise Ready

NFV Ready

Optimized Portfolio

Certified Partner Ecosystem

**RED HAT**®
**OPENSTACK**®
**PLATFORM**

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# LIFECYCLE CONSUMPTION OPTIONS

| CUSTOMERS DESIRING LONGER LIFE VERSION | CUSTOMERS DESIRING LATEST FEATURES |
|---|---|
| Long life versions offered every 3rd release | Offered on each release |
| Offers standard 3-year lifecycle, with optional 1-2 years of ELS (extended lifecycle support) | Supported for 1 year |
| Will offer long life ➡ long life tooling for migrations | Utilize director for automated upgrades and updates continuously |
| Customers staying on Red Hat OpenStack Platform 10 | Customers moving to Red Hat OpenStack Platform 11 |

# LIFECYCLE SUPPORT

Every 6 months we release a version of Red Hat OpenStack Platform supported for 1 year

Every 18 months we produce a "long life" version, which customers can opt to have support for up to 5 years

| | | Long life | | | Long life | | |
|---|---|---|---|---|---|---|---|
| RHOSP 8 Liberty | RHOSP 9 Mitaka | RHOSP 10 Newton | RHOSP 11 Ocata | RHOSP 12 Pike | RHOSP 13 Queens | RHOSP 14 R…. | RHOSP 15 S…. |
| 3 years | 3 years | 3 years (+2 years) | 1 year | 1 year | 3 years (+2 years) | 1 year | 1 year |

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# Red Hat OpenStack Platform - 10k Foot View

**11** **RHOSP 11**
*(Spring 2017)*

**12** **RHOSP 12**
*(Winter 2017)*

**13+** *(Spring 2018 and beyond)*

## Private IaaS

**RHOSP 11**
- Composable HA Architecture
- Composable Upgrades
- Ceph RBD Cinder Volume Replication driver for DR (Tech-preview)
- Opstools performance (collectd client)
- EC2 API deployment support
- Octavia LBaaS (tech preview)

**RHOSP 12**
- Containerized OpenStack Deployment (docker-cmd)
- Instance HA director integration
- Storage Encryption (manual keys)
- Octavia LBaaS full support
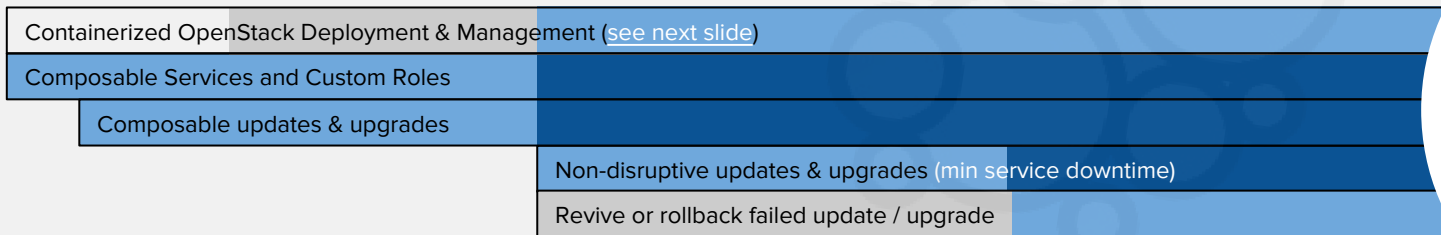- Additional TLS service coverage

**13+**
- Containerized OpenStack Deployment on OpenShift (kubernetes)
- Barbican availability
- Multi-site w/shared Keystone, and Replicated Storage
- Stretched Clusters
- Distributed Compute Nodes
- Introducing tooling for Parallel Cloud Migration

## NFV - Telco

**RHOSP 11**
- Support for VLAN Aware VMs
- Metadata exposure of SRIOV physical function VLAN tags to guests
- OpenDaylight automated deployment using director (*tech preview*)
- Hyper-Converged Infra

**RHOSP 12**
- OpenDaylight full support
- Emulator thread policies
- Flexible scheduling for SR-IOV

**13+**
- RT-KVM full support
- NFV Service Assurance (CloudForm Enhanced Integration)
- NFV Director UI

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# Red Hat OpenStack Platform **director**

## "Thai Flute" High Level View (Deployment Framework, Upgrades, Containers)

Containerized OpenStack Deployment & Management (see next slide)

Composable Services and Custom Roles

Composable updates & upgrades

Non-disruptive updates & upgrades (min service downtime)

Revive or rollback failed update / upgrade

| 11 Ocata | 12 Pike | 13 Queen | 14 R … |
|---|---|---|---|
| *GA*: Containerized Compute Role in TP[1] <br> *GA*: **Composable Upgrades** <br> *Throughout the cycle*: **Development of fully containerized docker-cmd** solution towards OSP 12 | *GA*: Containerized OpenStack Deployment based on **docker-cmd** <br> *GA*: **Composable Updates** (containers) <br> *GA*: **Rollback of updates** in containers <br> *GA*: **Revive failed update/upgrade** (ansible) <br> *GA*: **Modify list of services** on existing roles | *GA*: Minimize all Service APIs **downtime to minimum** <br> *GA*: **Major upgrades** of containers via Heat & Ansible <br> *GA*: **Rollback of upgrades** in containers | *GA*: **Deployment** of containerized OpenStack via **Kubernetes** as an underlying technology <br> *GA*: **Minor updates** of containers via **K8s** <br> *GA*: **Major upgrades** to K8s deployments <br> *Beyond*: **Ansible** based deploy (via RHOSP director) |

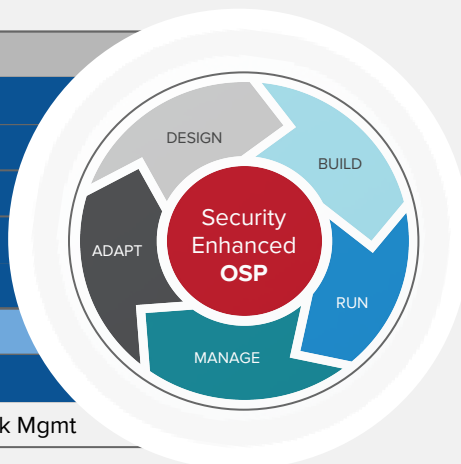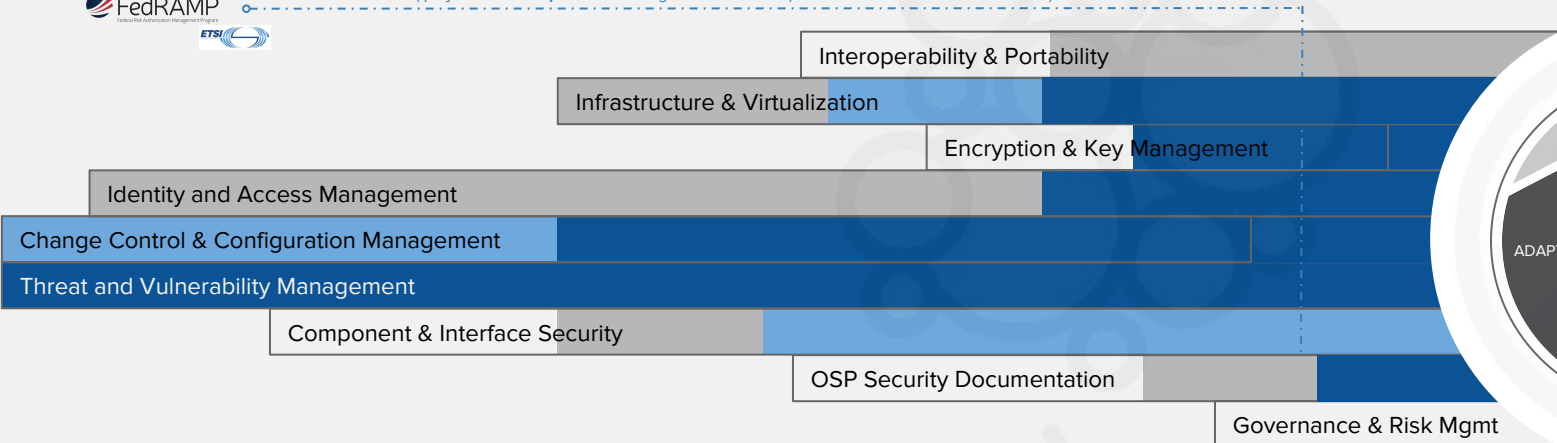| Standard deployment **(RPM based)** | Containerized deployment on top of RHEL **(docker-cmd)** | K8S & Ansible |
|---|---|---|

# OpenStack Platform Security Roadmap

## High Level View

FedRAMP

ETSI

( projected **default product** coverage for various compliance framework technical controls )

Interoperability & Portability

Infrastructure & Virtualization

Encryption & Key Management

Identity and Access Management

Change Control & Configuration Management

Threat and Vulnerability Management

Component & Interface Security

OSP Security Documentation

Governance & Risk Mgmt

DESIGN

BUILD

Security Enhanced **OSP**

ADAPT

RUN

MANAGE

| **11** Ocata | **12** Pike | **13** Queen | **14** R ... |
|---|---|---|---|
| - More coverage of TLS/SSL for internal services<br>- Maturing Federation services | - TLS/SSL coverage for all internal services | - Attestation/TXT [TP[1]]<br>- Infrastructure & virtualization hardening<br>- Barbican<br>- Cinder encrypted volumes | - Attestation/TXT [fully supported<br>- CloudForms based Governance and Risk Management |

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# RHOSP+Ceph Interop Roadmap

## High Level View

| | | | |
|---|---|---|---|
| | Ease of Use Improvements | | |
| | Cloudforms Support | | |
| | Ceph Storage Encryption Enablement | | |
| Scaling Ceph Storage Nodes | | | |
| Production-Grade HCI | Enhanced Production-Grade HCI | | |
| Scaling Ceph Storage Nodes | Containerization of Ceph services | | |
| Red Hat Storage Console Integration | | | |

**Ceph + OSP Interoperability**

**11** Ocata    **12** Pike    **13** Queen    **14** R ...

| 11 Ocata | 12 Pike | 13 Queen | 14 R ... |
|---|---|---|---|
| - Allow HCI and non-HCI nodes during the same deployment<br>- RBD mirror director integration<br>- OSPd support for dedicated Ceph MON nodes<br>- Scale testing of OSPd Ceph | - Containerized HCI w/resource mgmt<br>- Ceph containerization integration<br>- Rolling Ceph Upgrades via director<br>- RBD mirror director enhancements<br>- New Ceph Major release support<br>- Production-grade CephFS for Manila<br>- RBD encryption director enablement<br>- Console integration (Tendrl TP[1]) | - Rolling Ceph upgrades via director<br>- Scaling enhancements<br>- Director UI enhancements<br>- Cloudforms support<br>- Cinder RBD replication<br>- New DR policy<br>- Console integration (Tendrl) | - Multi-site solution<br>- Scaling<br>- Cloudforms<br>- Continuous Improvements |

[1]TP - Tech Preview

| Red Hat Ceph Storage 2.1 | Red Hat Ceph Storage 3.x | Red Hat Ceph Storage 4.x |
|---|---|---|
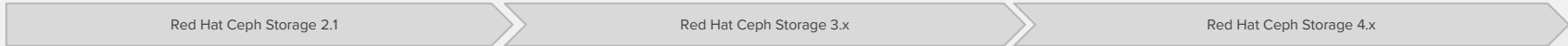
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# LEADING OPENSTACK TO SUCCESS?

# Peace. Calm. Tranquility.

# Mission Accomplished!

We are the "Red Hat" of OpenStack

Slide from my
2013 Summit
talk →

**Which OpenStack-powered solutions are most used?**

A new question on the survey this year, we asked which vendor's products power users' OpenStack clouds. Red Hat, Canonical and Mirantis topped the list.
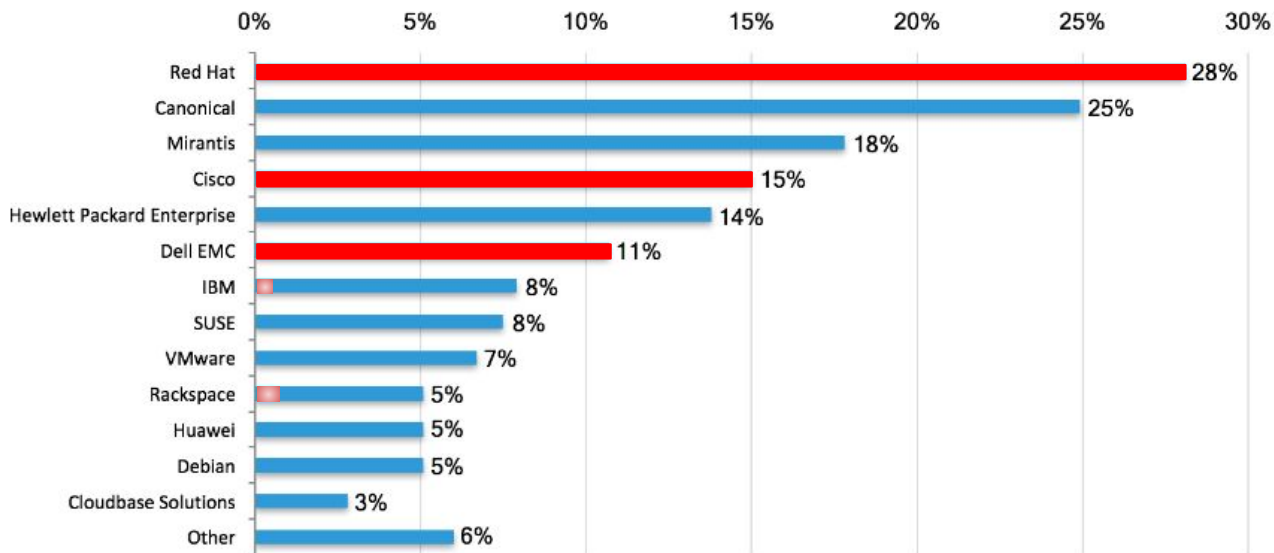
| Vendor | Percentage |
|---|---|
| Red Hat | 28% |
| Canonical | 25% |
| Mirantis | 18% |
| Cisco | 15% |
| Hewlett Packard Enterprise | 14% |
| Dell EMC | 11% |
| IBM | 8% |
| SUSE | 8% |
| VMware | 7% |
| Rackspace | 5% |
| Huawei | 5% |
| Debian | 5% |
| Cloudbase Solutions | 3% |
| Other | 6% |

**Figure 5.15** n=253

Source: https://www.openstack.org/assets/survey/April2017SurveyReport.pdf (red layer added)

#redhat #rhsummit