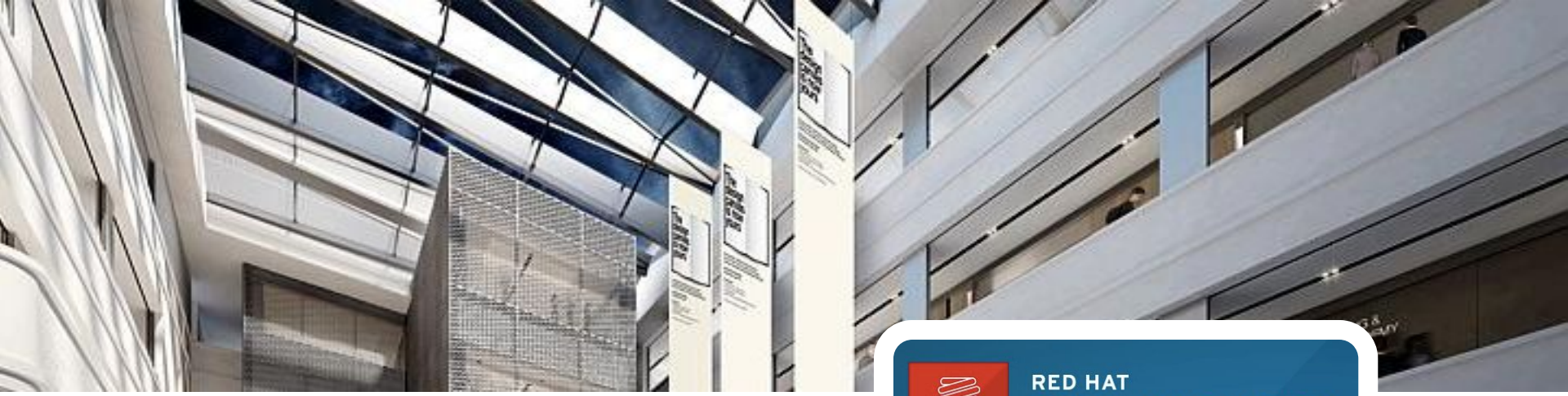

RED HAT
OPEN INNOVATION
SYMPOSIUM

OpenStack & OpenShift

National Design Centre, Singapore
Uli Hitzel, Senior Architect
December 17th 2014

iDA INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

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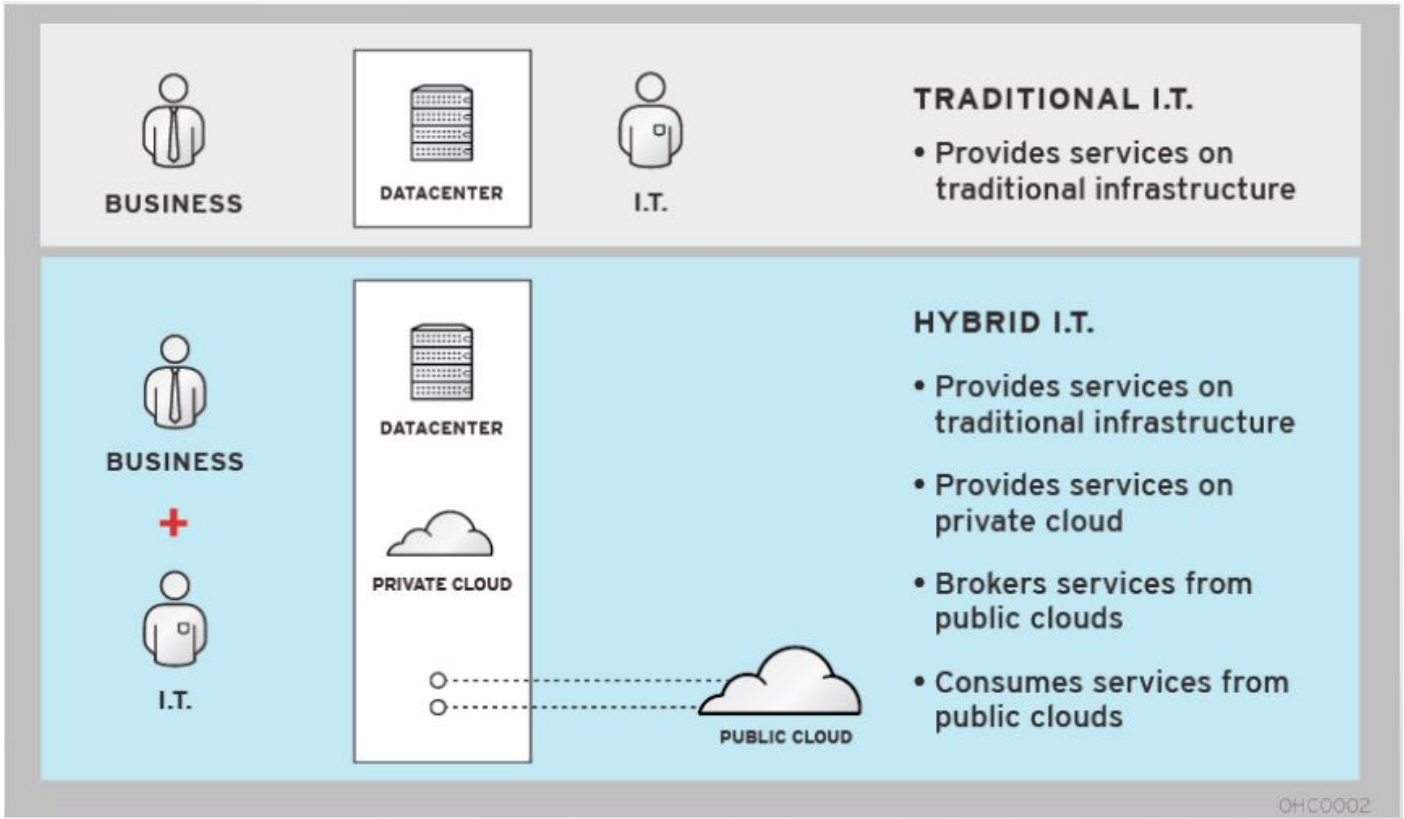
Agenda

Introduction
Changing Role of IT | Evolving Workloads | Service Layers

OpenStack
Overview | Use Cases | User Story | Innovation

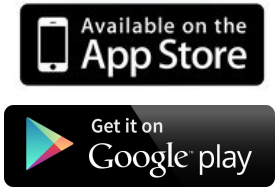
OpenShift
Overview | PaaS & DevOps | Innovation

The changing role of IT

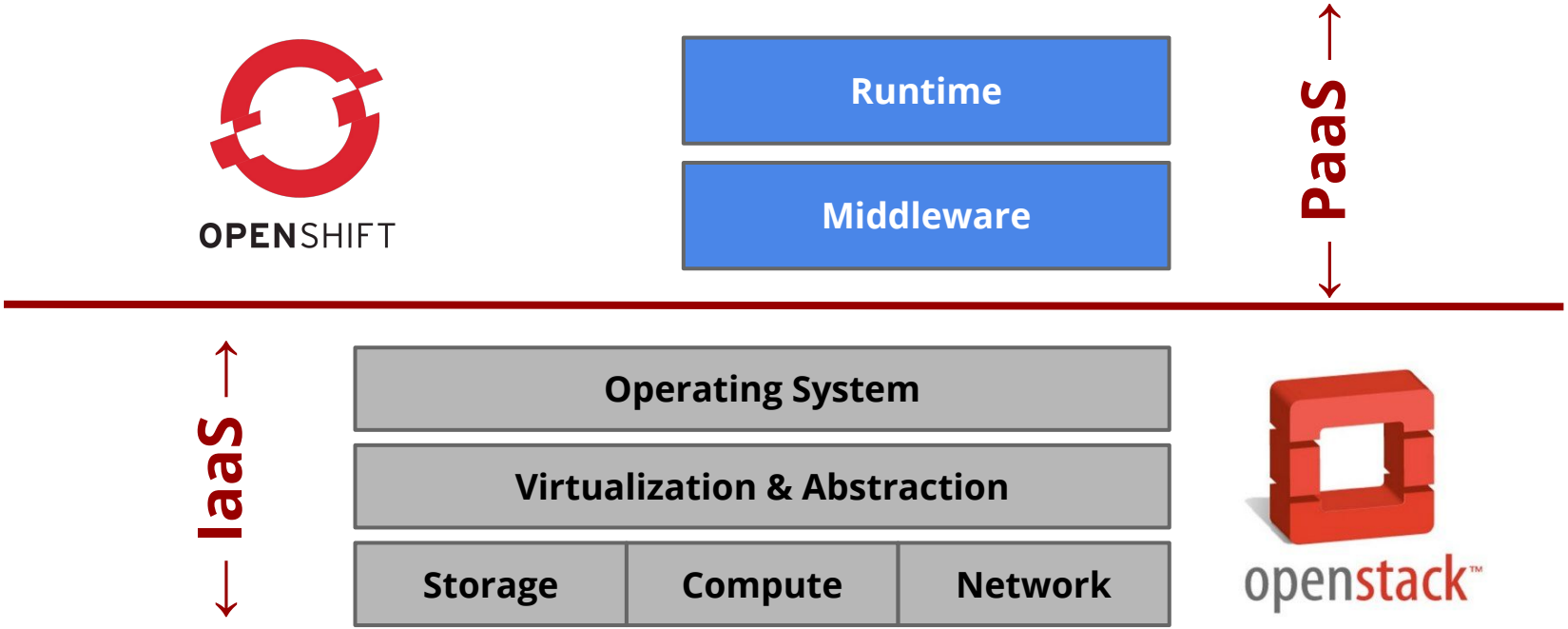


Workloads are evolving

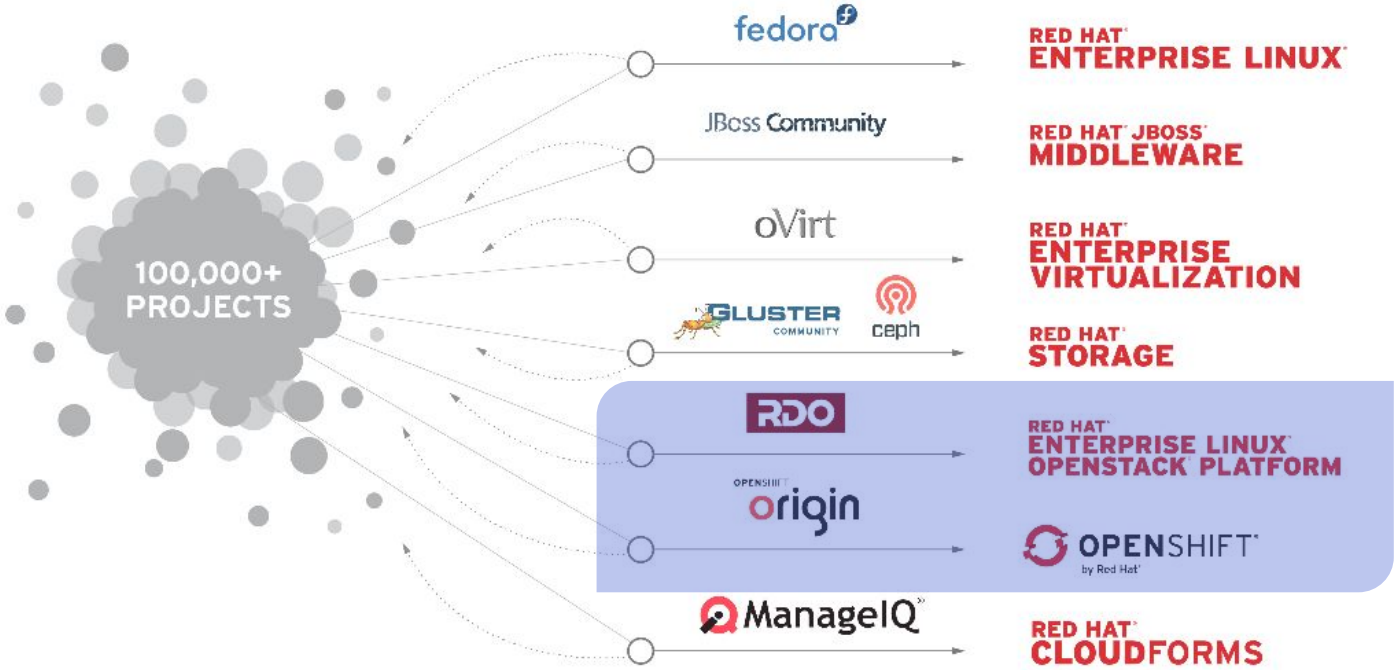
Applications are evolving



Cloud - Service Layers



Community Innovation → Enterprise



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OpenStack: Elastic Infrastructure

Open source project for building a private or public infrastructure-as a-Service (Iaas) cloud running on standard hardware

Cloud operating system that controls large pools of compute, storage and networking resources throughout a datacenter

Community of global collaborators creating open source software to build public and private clouds

OpenStack - Use Cases

- **Telco / ISP public cloud offering**
- **Internal Private Cloud**
- **AWS Equivalent**

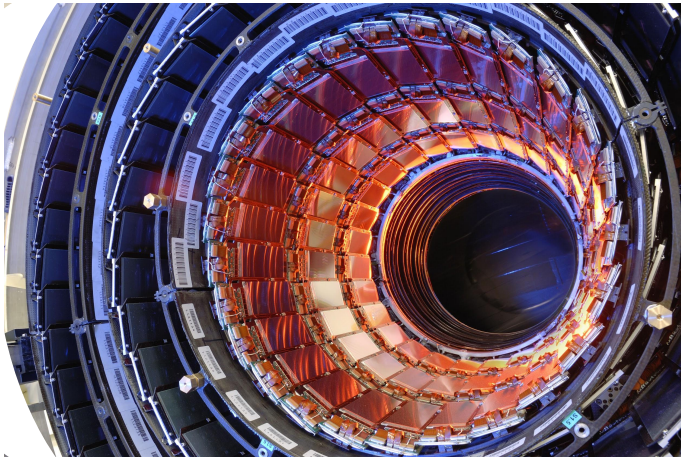
- **Content Farm**
- **Scale-Out Storage**
- **AWS S3 Equivalent**
- **Enterprise Drop-Box**

- **Network Functions Virtualization (NFV)**


LHCb
ATLAS
CERN Meyrin
CERN Prévessin
SPS 7 km
SUISSE
FRANCE
CMS
ALICE
LHC 27 km
https://www.google.com/maps/views/streetview/cern?gl=us

User Story: Cern

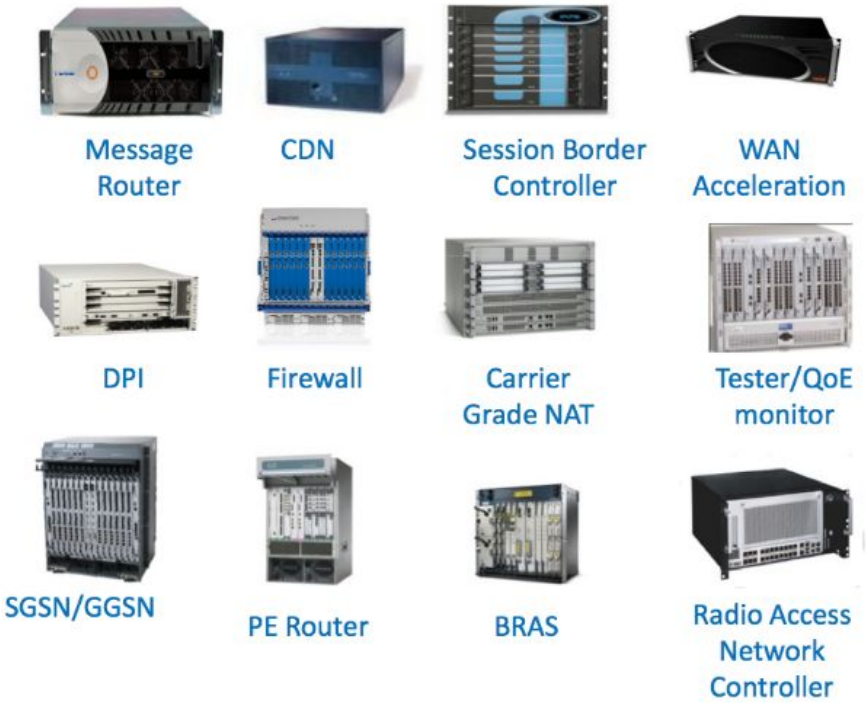
- Large Hadron Collider: particle accelerator
- 40 million photos per second, producing 1PB of data per second
- Massive increase in computing requirements, no increase in staff
- Cern Cloud based on OpenStack, Ceph & Puppet
- analytic results in minutes instead of months
- Project started 2011, production 2013
- 4 OpenStack clouds with ~115k cores in total
- Expected to pass 150k cores by Q1 2015
- **All non-specific Cern code upstream**



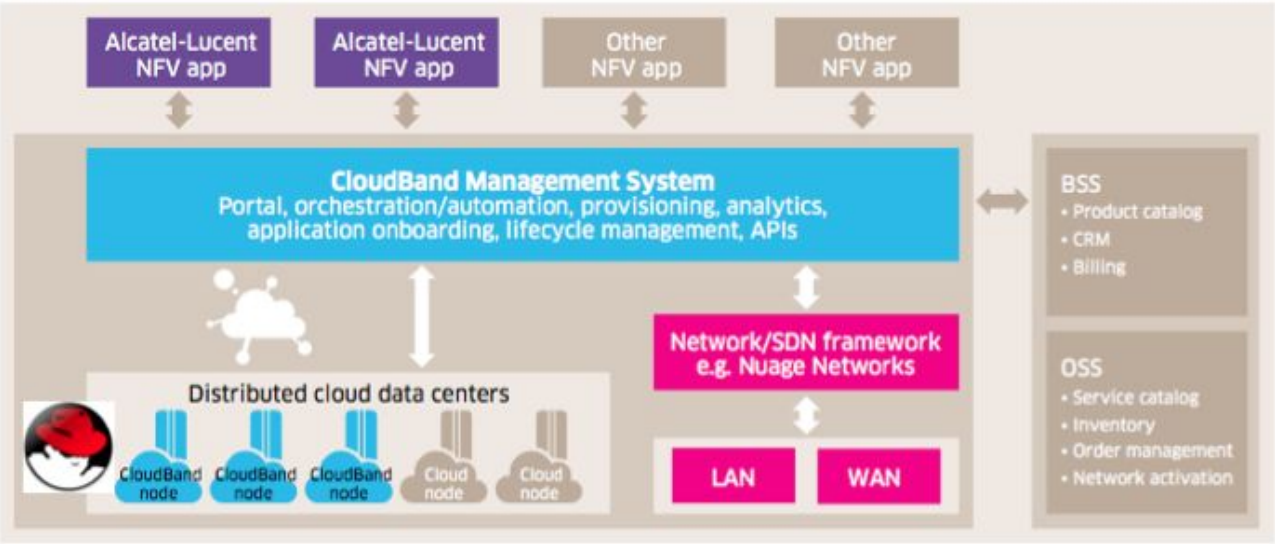
User Story: eBay

- multi-tenant, multi-region, self-service OpenStack cloud that provides on-demand computing resources for all eBay developers
- project started 2012
- 95% of eBay traffic powered by OpenStack
- ~7k servers
- “frictionless” -- no tickets, no people, get job done
- Advantages: reduced app provisioning time from 4 weeks to 30 minutes. Saved double-digit million dollars on hardware
- **contributor to Trove → DBaaS**

Network Function Virtualization



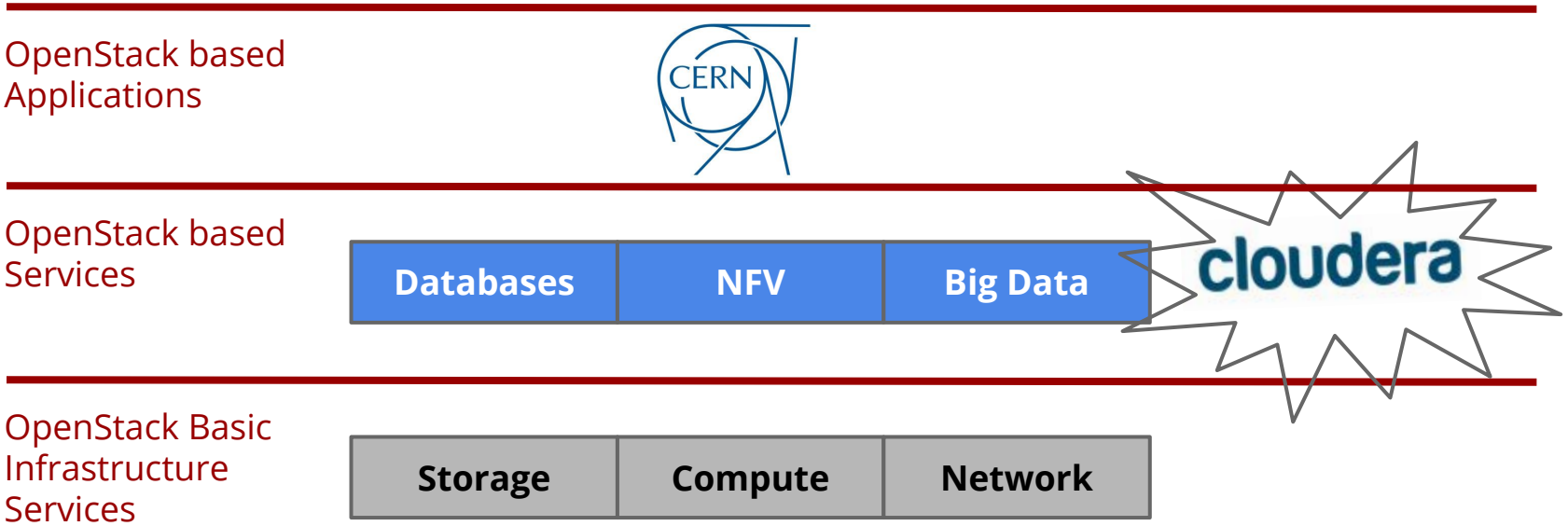
Alcatel Lucent: CloudBand



THE PLATFORM FOR NFV

CLOUDBAND™

OpenStack as a basis for Innovation



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OpenShift

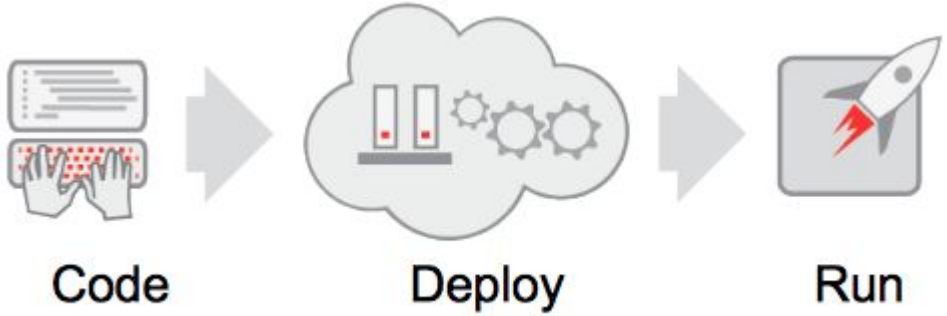
Open source project for building a private or public platform-as a-Service (Paas) cloud running on various virtualization or IaaS platforms

Elastic middleware layer that provides environments for developers to build, test and deploy their applications while taking care of scalability of resources

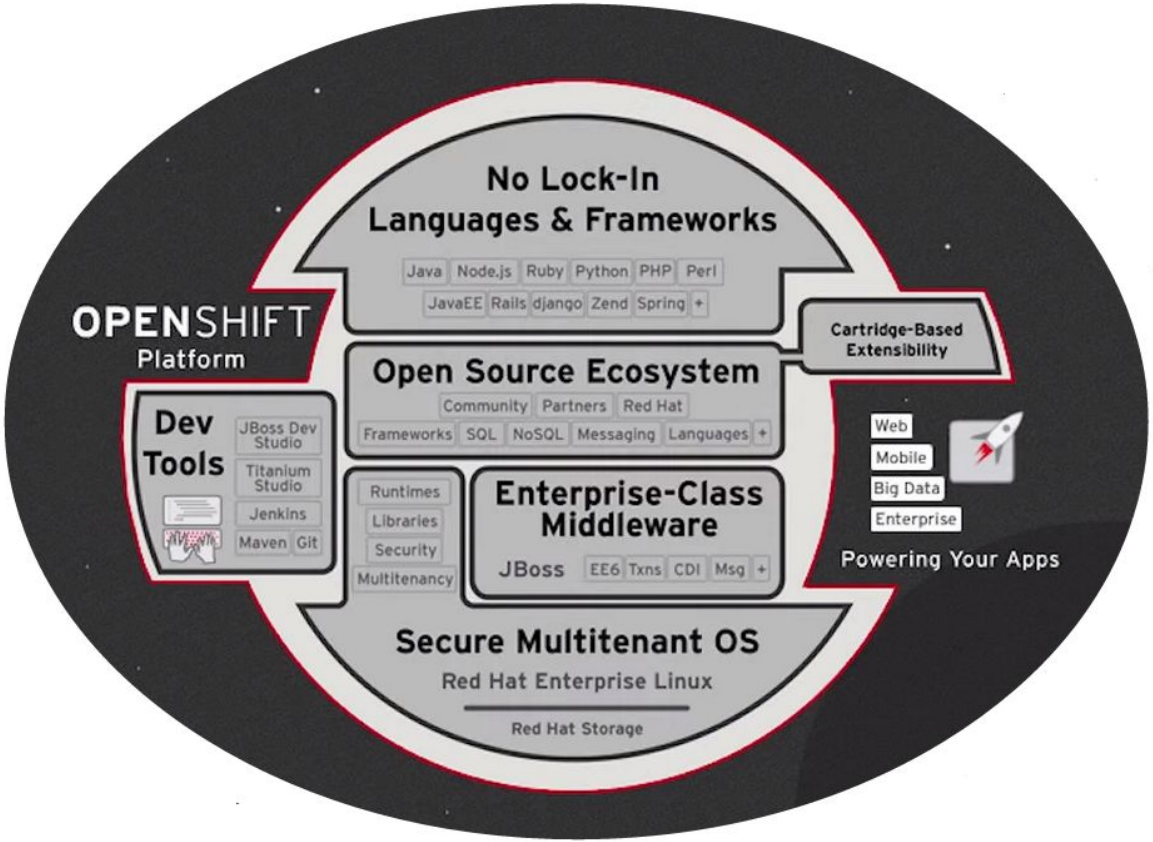
Community of global collaborators creating open source software to build public and private clouds

OpenShift: DevOps & Continuous Delivery

- standardizes developer workflows
- accelerates & automates processes
- increases productivity
- streamlines IT services delivery



OpenShift: Cloud for developers



Integration into Eclipse

OpenShift: Focus & innovate faster

Physical

How to Build an App:

1. Have Idea
2. Get Budget
3. Submit hardware acquisition request
4. Wait
5. Get Hardware
6. Rack and Stack Hardware
7. Install Operating System
8. Install Operating System Patches
9. Create user Accounts
10. Deploy framework/appserver
11. Deploy testing tools
12. Code
13. Test
14. Buy and configure Prod servers
15. Push to Prod
16. Launch
17. Order more servers to meet demand
18. Wait…
19. Deploy new servers
20. Etc.

Virtualized

How to Build an App:

1. Have Idea
2. Get Budget
3. Submit VM Request request
4. Wait
5. Deploy framework/appserver
6. Deploy testing tools
7. Code
8. Test
9. Configure Prod VMs
10. Push to Prod
11. Launch
12. Request VMs to meet demand
13. Wait
14. Deploy app to new VMs
15. Etc.

With PaaS

How to Build an App:

1. **Have Idea**
2. **Get Budget**
3. **Code**
4. **Test**
5. **Launch**
6. **Automatically Scale**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