

Open Source Cloud
Strategies and Solutions

Event by Sardina Systems

Simplifying the OpenStack Cloud Lifecycle

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What We'll Cover Today

- OpenStack infrastructure deployment & maintenance;
- Performance and stability;
- Challenges in OpenStack development;
- Upgrading OpenStack.

OpenStack Introduction

- OpenStack is a modern cloud platform;
- It can be installed on almost any hardware;
- Provides some benefits of public clouds;
- Broad vendor support for guest images;
- The standard hypervisor is QEMU/KVM.



Deploying and Maintaining OpenStack

Openstack is
a set of microservices

Numerous
configuration options
to fit any requirements

High Availability
and Scalability
by design

Automation of all lifecycle
stages is a must

Monitor
your system



Performance and Stability

- Python-based services need tuning, e.g. worker limits;
- RabbitMQ puts the most pressure on controller's CPU;
- Reserve some resources on hypervisors;
- OpenVSwitch fits in most cases, DPDK & SR-IOV pushes further;
- Mix direct attached and shared storage.





OpenStack Development Challenges

Python-based services:

- Dependencies packaging;
- Rapid Python version deprecation.

Release of bug fixes can be delayed if these bugs aren't high priority:

- Require building your own infrastructure to mitigate;
- Can make merge requests upstream, but backporting bug fixes takes time.

Reduced speed of new features:

- Unified limits.

Slow development and bug fix in projects that get low attention from devs:

- Trove;
- Freezer.

Challenges with third-party drivers

Upgrading OpenStack Without Nightmares

1. Maintain knowledge base long before the upgrade.
2. Automate upgrade tasks, maintain granular controls:

WHAT

WHEN

WHERE

3. Prepare outside maintenance window:

- Backups;
- Package and repository staging;
- online_data_migrations completion – ensuring that the database is ready.

4. Live migration phase allows workload to run uninterrupted during upgrade.





Wrapping It Up

- **OpenStack** is a modern cloud platform which can integrate many technologies.
- VMs, Baremetal (with Ironi) and containers (Magnum) **on a unified platform**.
- **Networking** capabilities cover a wide range of requirements, from flat networks to complex SDN-based setups that include smart switches, BGP etc.
- **Automation** is the key.
- Achieving **low latency** requires appropriate planning.
- Active participation in code development ensures continuous platform **evolution**.
- Regular upgrades are important.

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Thank you!

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