

# UPGRADING OPENSTACK WITHOUT COMPLEXITY OR COMPROMISE



```
Carousel.prototype.getItemForDirection = function (direction, active) {
  this.$items = item.pa
  return this.$items.index(item ||
}

Carousel.prototype.getItemForDirection = function (direction, active) {
  var delta = direction == 'prev' ? -1 : 1
  var activeIndex = this.getItemIndex(active)
  var itemIndex = (activeIndex + delta) % this.$items.length
  return this.$items.eq(itemIndex)
}

Carousel.prototype.to = function (pos) {
  var that = this
  var activeIndex = this.getItemIndex(this.$active = this.$element.fi

  if (pos > (this.$items.length - 1) || pos < 0) return
  if (this.sliding) return this.$element.one('slid.bs.carousel'
  if (activeIndex == pos) return this.pause().cycle()

  return this.slide(pos > activeIndex ? 'next' : 'prev', this.$items.
}

Carousel.prototype.pause = function (e) {
  e || (this.paused = true)

  if (this.$element.find('.next, .prev').length && $.support.transiti
    this.$element.trigger($.support.transition.end)
    this.cycle(true)
  }

  this.interval = clearInterval(this.interval)

  return this
}
```

# TABLE OF CONTENTS

- WHY UPGRADE OPENSTACK? ..... 3
- HOW RACKSPACE UPGRADES OPENSTACK ..... 3
- CONCLUSION ..... 3



OpenStack® is a mature, rapidly growing open-source cloud platform that powers enterprise infrastructure across many industries in virtually every region of the world. According to Forrester Research, it is “the dominant platform for private cloud.” OpenStack helps enterprises lower costs and eliminate vendor lock-in while simultaneously providing the level of flexibility, completeness and robust capability that enterprise CIOs need to address the dynamic requirements of their business.

Backed by a community of more than 70,000 individual contributors across hundreds of innovative IT organizations, the OpenStack platform features dozens of active projects and two major releases per year. This pace of innovation is unmatched in the open-source community, allowing organizations of all sizes to reap the benefits of continual improvements in stability and security along with new features and functionality.

However, these advances do come at the cost of increased complexity, and this complexity is the reason many organizations struggle with OpenStack. In fact, according to a recent CIO.com survey, half of all enterprises that have tried to implement an OpenStack cloud have failed.

Those businesses that do succeed at implementing an OpenStack cloud often run into a new set of challenges when it comes to upgrading their environment. The same forces that drive OpenStack innovation can complicate the process of moving from one OpenStack release to another. For example, upgrading to the recent OpenStack Newton release requires nearly 3,000 configuration changes. Without the right level of operational expertise, this can be a daunting challenge.

That’s where Rackspace steps in.

According to 451 Research, “Rackspace is the world’s leading OpenStack service provider.” We simplify OpenStack and eliminate its complexity by delivering it as a managed service. We give you the power of OpenStack without the pain of running it – or upgrading it – so you can focus on your business.

## WHY UPGRADE OPENSTACK?

Upgrading your OpenStack cloud from a legacy release to the most current release empowers you to take advantage of the latest features and functionality and helps to keep your cloud safe and secure by fixing bugs and patching security vulnerabilities. For instance, the latest upgrade for Rackspace OpenStack Private Cloud eliminated 3,500 bugs and removed known vulnerabilities around privilege escalation, cross-site scripting (XSS) and denial of service attacks (DDoS).

## HOW RACKSPACE UPGRADES OPENSTACK

We deliver OpenStack private clouds as a managed service. Part of this service includes upgrading your environment to keep your cloud safe and secure and to provide you with the latest functionality.

Our process includes three distinct phases:

**Automated pre-deployment checks** – In this first phase, we use custom-built automation and tooling capabilities to prepare your current private cloud environment for the upgrade. During this phase, we back up critical data and verify the state of critical OpenStack services to ensure readiness for the upgrade. The steps include:

- Creating a backup of the deployment configuration and code
- Creating a backup of databases and metadata, including active Nova instances and attached Cinder volumes
- Verifying that the most critical services, including Nova, Neutron and Cinder, are healthy and ready to be upgraded
- Verifying that the Galera Cluster® database and RabbitMQ™ cluster are healthy and ready to be upgraded

**Automated in-place OpenStack upgrade** – In the second phase of the process, we upgrade your OpenStack private cloud to the target release. This is the most complex phase of the process and includes the following steps:

- Converting OpenStack Ansible deployment configuration and required dependencies to new target release
- Preparing and updating each host’s operating system
- Upgrading the load balancer configuration
- Preparing and updating the containerized OpenStack control plane
- Running Ansible playbooks to install new RPC OpenStack code
- Configuring new OpenStack services and migrating databases
- Restarting the OpenStack services

**Post-deployment checks** – Once the upgrade is complete, we run standard tests to confirm that the new cloud environment is operating correctly. These tests include:

- Creating and deleting an instance
- Creating, attaching and deleting Cinder volumes
- Accessing an instance
- Verifying that Nova, Neutron and Cinder service states are operational and error-free
- Verifying that Galera Cluster database and RabbitMQ cluster states are operational and error-free
- Checking Rackspace Monitoring-as-a-Service portal for alerts

In addition to these primary phases, we may need to reboot certain nodes of the cloud environment in order to upgrade specific components such as the Linux kernel and libc packages, or to make firmware updates. If these reboots are required, we will stagger them to guarantee service availability.

## CONCLUSION

OpenStack is the leading open-source cloud computing platform in the world, due in part to its large and active community of contributors. Keeping OpenStack up to date allows you to take advantage of the latest capabilities and security features as they are released. However, upgrading an OpenStack cloud from one release to the next is a complex challenge and requires a significant amount of operational expertise.

Rackspace simplifies OpenStack and eliminates its complexity by delivering it as a managed service. Based on our experience upgrading hundreds of OpenStack clouds for our customers – as well as building and operating the world’s largest OpenStack cloud – we’ve developed an upgrade methodology that gives you access to the latest capabilities and security features without any of the pain or complexity associated with doing it yourself.

To learn more about how Rackspace can help you with cloud technology, sign up for our free cloud strategy session at <http://go.rackspace.com/OpenStackExperts>

## ABOUT RACKSPACE

Rackspace, the #1 managed cloud company, helps businesses tap the power of cloud computing without the complexity and cost of managing it on their own. Rackspace engineers deliver specialized expertise, easy-to-use tools, and Fanatical Support® for leading technologies developed by AWS, Google, Microsoft®, OpenStack, VMware® and others. The company serves customers in 120 countries, including more than half of the FORTUNE® 100. Rackspace was named a leader in the 2015 Gartner Magic Quadrant for Cloud-Enabled Managed Hosting, and has been honored by Fortune, Forbes®, and others as one of the best companies to work for.

Learn more at [www.rackspace.com](http://www.rackspace.com) or call us at **1-800-961-2888**.

© 2017 Rackspace US, Inc.

This document is provided "AS IS" and is a general introduction to the service described. You should not rely solely on this document to decide whether to purchase the service. Features, benefits and/or pricing presented depend on system configuration and are subject to change without notice. Rackspace disclaims any representation, express or implied warranties, including any implied warranty of merchantability, fitness for a particular purpose, and non-infringement, or other commitment regarding its services except for those expressly stated in a Rackspace services agreement. This document is a general guide and is not legal advice, or an instruction manual. Your implementation of the measures described may not result in your compliance with law or other standard. This document may include examples of solutions that include non-Rackspace products or services. Except as expressly stated in its services agreements, Rackspace does not support, and disclaims all legal responsibility for, third party products and services. Unless otherwise agreed in a Rackspace service agreement, you must work directly with third parties to obtain their products and services and related support under separate legal terms between you and the third party.

Rackspace cannot guarantee the accuracy of any information presented after the date of publication.

Rackspace®, Fanatical Support® and other Rackspace marks are service marks or registered services of Rackspace US, Inc. and are registered in the United States and other countries. Other Rackspace or third party trademarks, service marks, images, products and brands remain the sole property of their respective holders and do not imply endorsement or sponsorship.

PRI-CWP-RPC-\_OpenStack\_Upgrades-5814-v01

MARCH 23, 2017

