

HELLO!

OpenInfra
DAYS



NORTH AMERICA

SCALE



CephFS and OpenStack Manila: File Sharing Without the Headaches (Mostly!)

Goutham Pacha Ravi

RED HAT

gouthamr@redhat.com

gouthamr

Carlos da Silva

RED HAT

carloss@redhat.com

carloss

Ashley Rodriguez

RED HAT

ashrodri@redhat.com

ashrodri



AGENDA

- ✦ How OpenStack Manila integrates with CephFS
- ✦ Native CephFS vs CephFS NFS
- ✦ Demo
- ✦ What's next



OpenStack Manila

- Self-service
- POSIX Compliant
- Elastic
- Secure



Shared File
Systems accessible
over a network



MANILA
an OpenStack Community Project

- Multiple NAS protocols supported - most common ones include NFS, CEPHFS and CIFS
- Control plane for provisioning, and day-2 management of controlled resources - does not operate in the data path



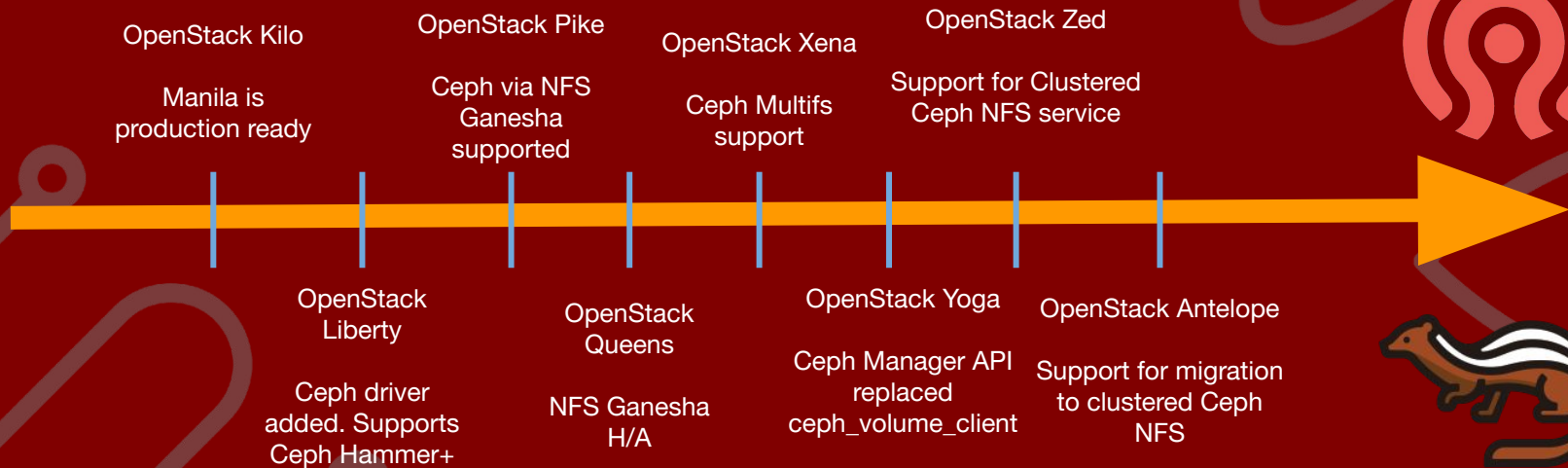
CephFS

- Part of a “Unified” storage architecture
- POSIX-compliant distributed file system
- Scalable
- Fault Tolerant
- Self healing
- Offers a user space client





CephFS with OpenStack Manila

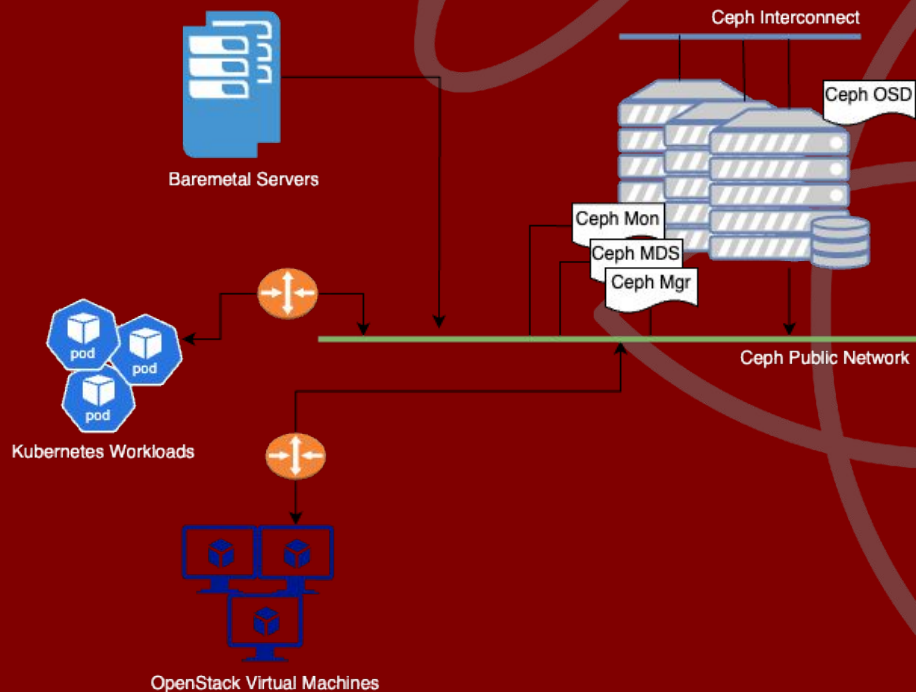


- A Manila share is data isolated Ceph “subvolume” with a size quota
- CephFS driver provisions subvolumes within a single CephFS filesystem
- Manila access rules cause subvolumes to be exported to CephX clients
- CephFS volumes can be consumed via ceph-fuse, or kernel cephfs (Native CephFS) and NFS v3, v4.1+



Native CephFS

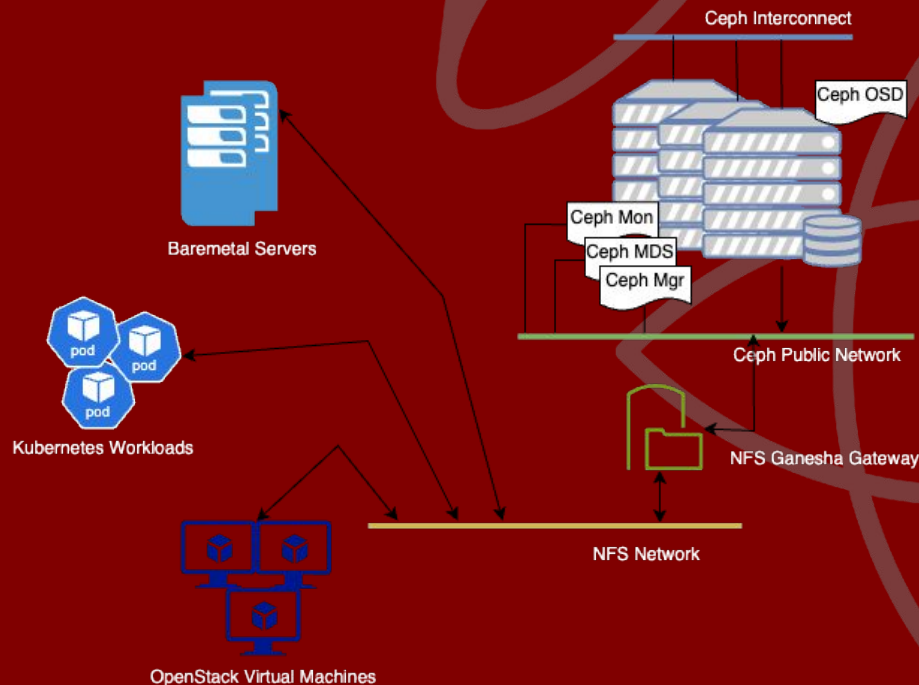
- Storage Provider Network extends the Ceph Public Network to user VMs, containers or bare metal servers.
- CephX accounts not analogous to OpenStack users. CephX account names are global within a Ceph cluster.
- Users within a namespace (OpenStack project) can hide their CephX secrets via Manila resource locks
- CephFS with the native driver works well in an environment with trusted end users on a private cloud.





CephFS via NFS

- The driver uses NFS-Ganesha gateway to provide NFSv4.1 protocol access to CephFS subvolumes.
- User compute instances are booted with at least two NICs: one NIC connects to the project router and the second NIC connects to an NFS network, which connects directly to the NFS-Ganesha gateway.
- From Ceph Quincy, Ceph has native support to deploy NFS Ganesha clusters as an active/active Ceph NFS service
- With Ceph Reef, there's a new Ingress service mode that uses HAProxy with Proxy Protocol V2, allowing Manila client access rules to be conveyed, providing scale as well as simplicity to end users



<https://youtu.be/uGUteH30aQM>



What's next

- VirtIOFS (available with Epoxy), manila-csi integration is planned
- CephFS via SMB
- CephFS NFS QoS
- User defined encryption
- NFS autoscaling and recovery
- Kerberos

THANK YOU!

Connect with us:

Chat: #openstack-manila on OFTC

E-Mail: openstack-discuss@lists.openstack.org

Ping: gouthamr, carloss, ashrodri
(#OFTC, and @redhat.com)



PTG PROJECT TEAMS GATHERING

A Fully Virtual Event

<https://ptg.openinfra.org/>

APRIL 7-11, 2025