File-share Use-cases, Demos And More With OpenStack Manila

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Cloud Platform Architect, NetApp

http://kapilarora.de

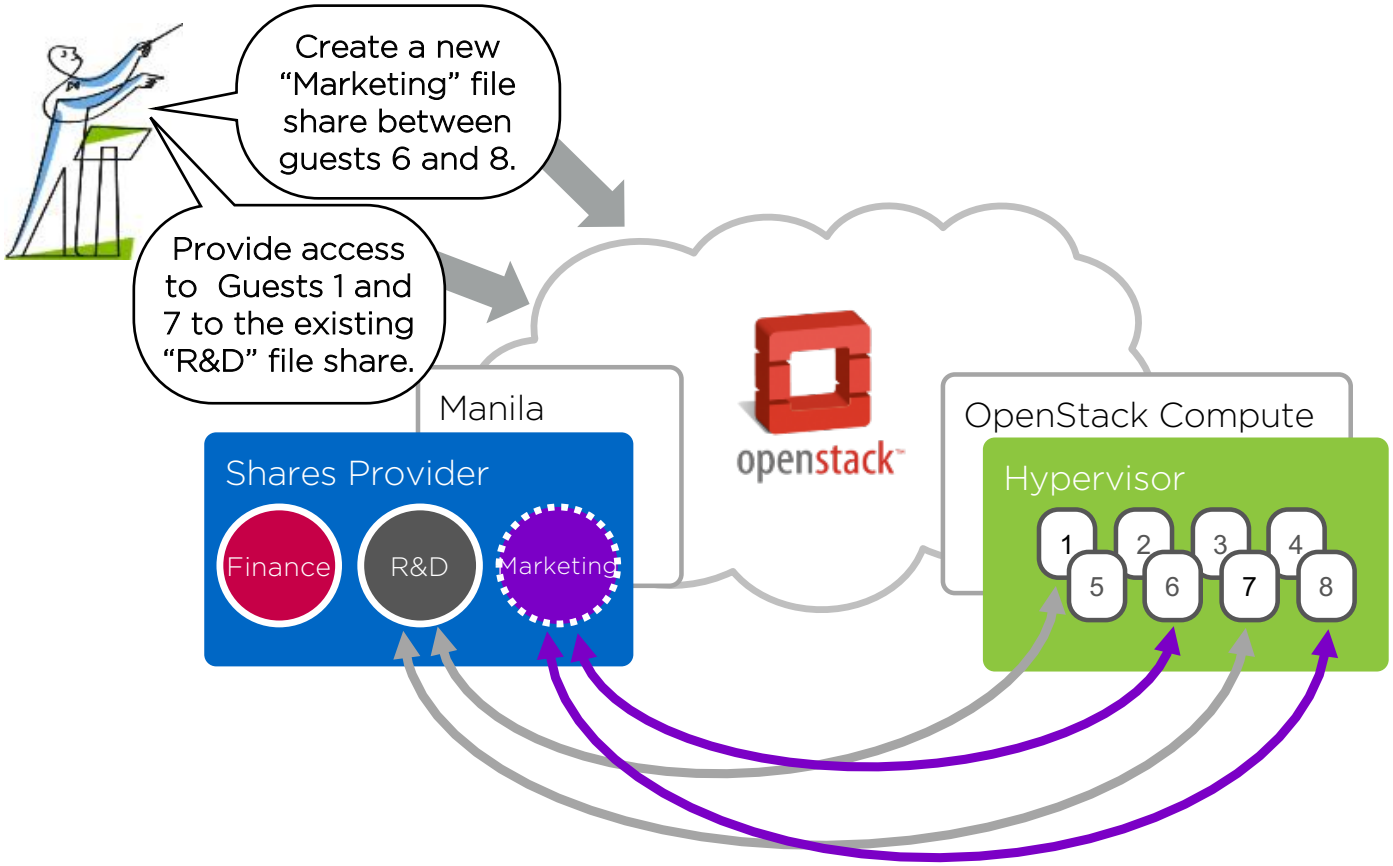
Agenda

1) Overview
2) Use-cases
3) Features & Demos
4) Getting started
5) Q & A

Manila Overview

What is Manila?

- Multi-tenant, secure file share as a service
- Open management and provisioning API
- "Cinder for shared file systems"
- NFS, CIFS, HDFS protocols



NetApp

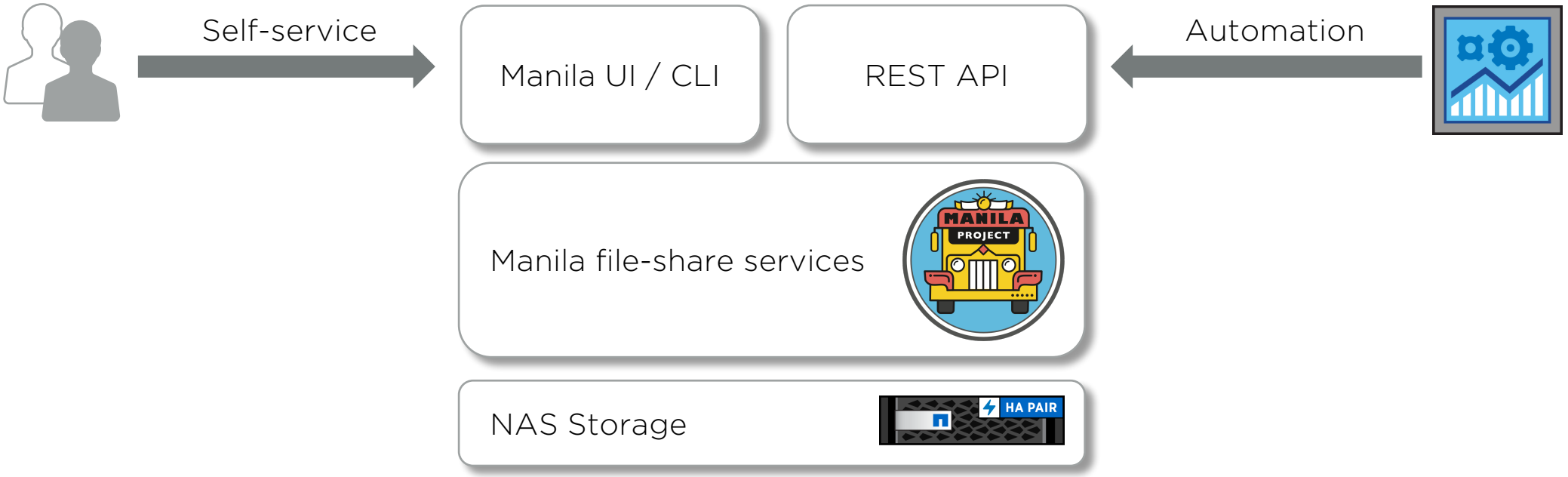
The Age of Cloud Shared Services

- OpenStack Manila: June 2013
- Microsoft Azure Files: May 2014
- Amazon Web Services Elastic File System: April 2015

Storage Service	Amazon Web Services	Microsoft Azure	OpenStack
Object	S3	Blob and table storage	Swift
Archival (cold) storage	Glacier	Azure backup	-
Block	Elastic block storage (EBS)	Block blob storage	Cinder
File	Elastic file system(EFS)	Azure files	Manila

Shared File Services Management with Manila

An open, standard API for File System Provisioning and Management



Manila – key concepts

Share (an instance of a shared file system, e.g. NFS or CIFS)

User specifies size, access protocol, “share type”.

Can be accessed concurrently by multiple instances.

Share access rules (ACL)

Defines which clients can access the share.

Share network

Defines the Neutron network & subnet through which instances access the share.

A share can be associated with only one share network.

Manila – key concepts

Security service

Finer-grained client access rules for Authn/z (e.g. LDAP, Active Directory, Kerberos).

Share can be associated to multiple security services.

Snapshots

Read-only copy of share contents.

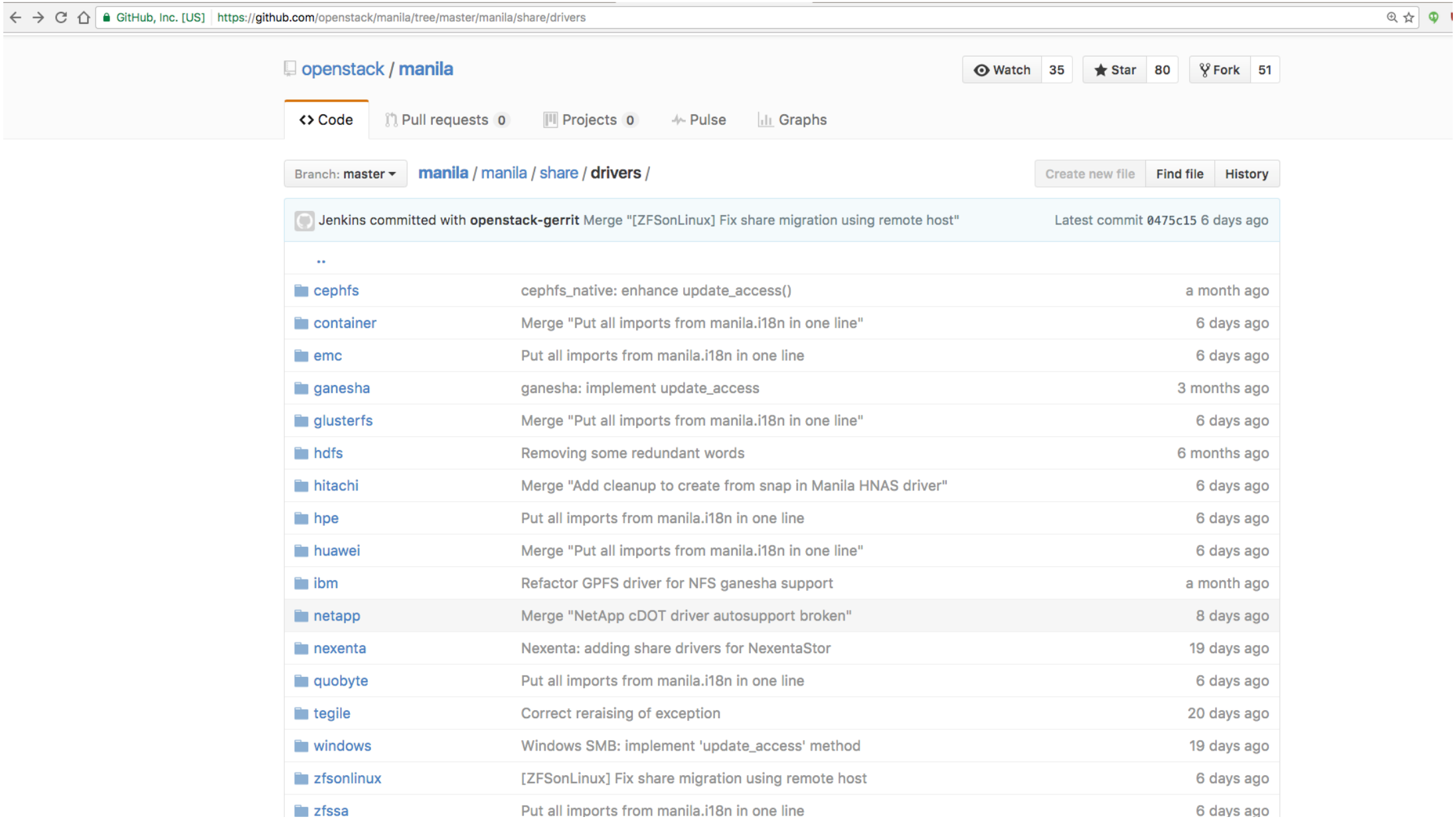
New share can be created from a snapshot.

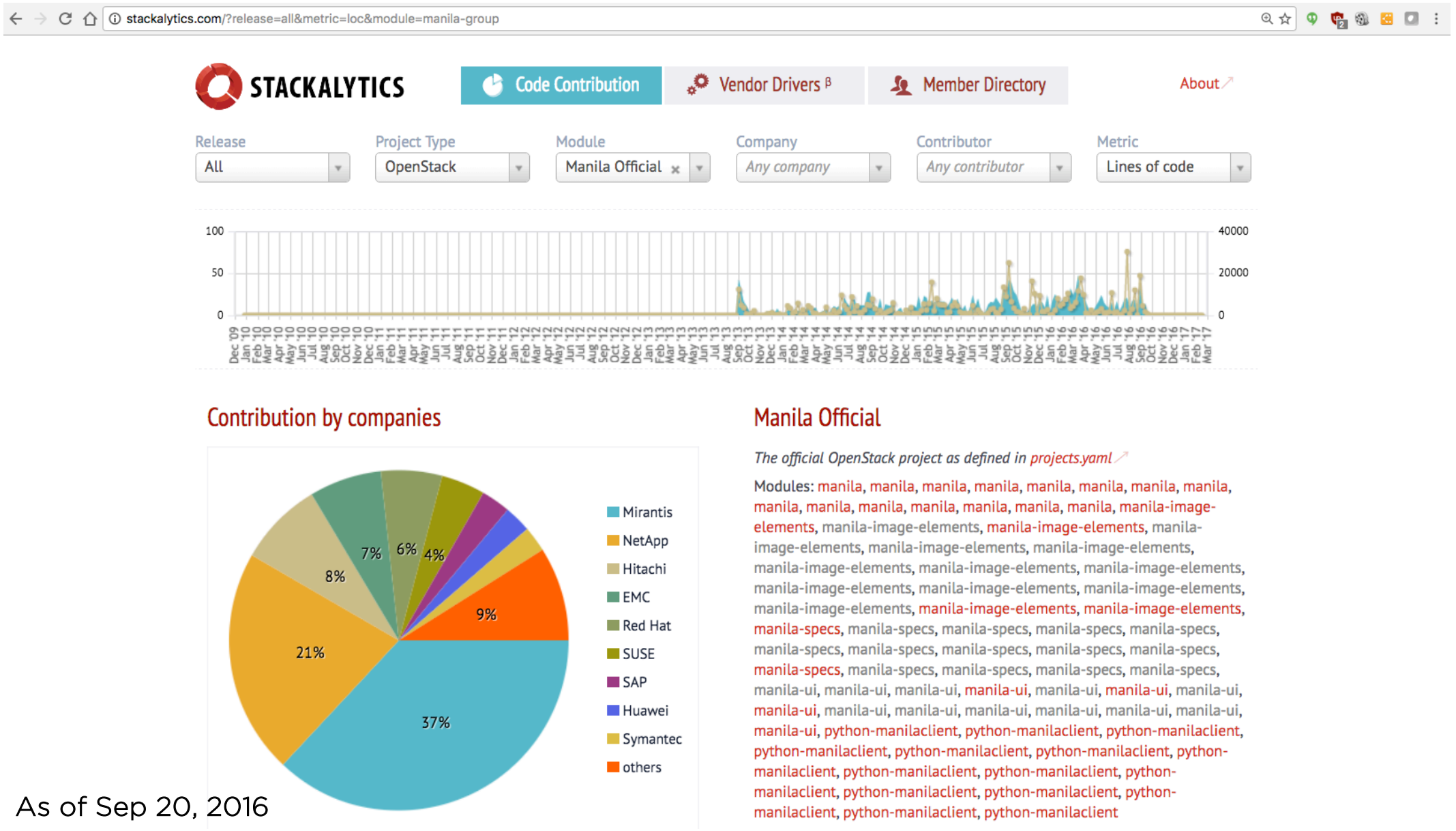
Backend

Provider of shares; a share resides on a single backend.

Driver

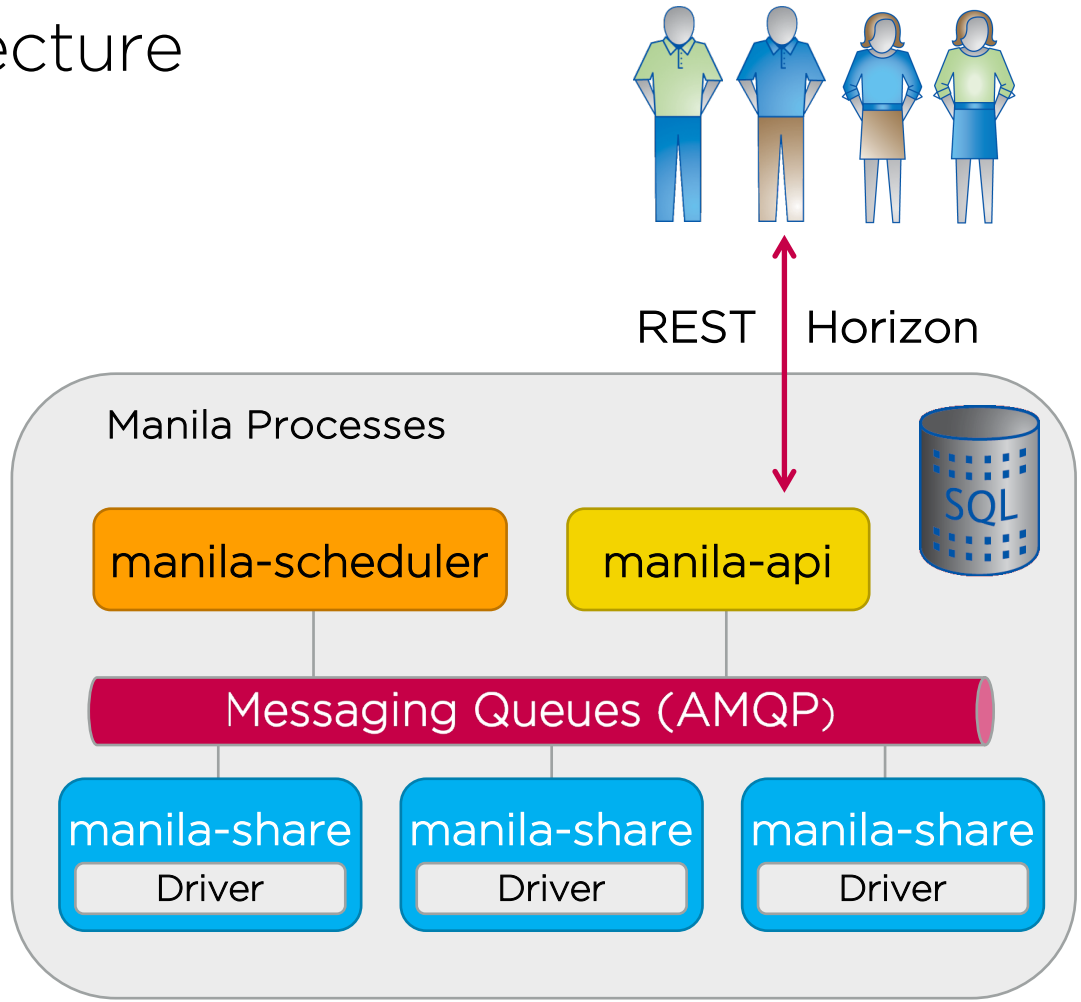
Vendor or technology-specific implementation of backend API.


GitHub, Inc. [US] https://github.com/openstack/manila/tree/master/manila/share/drivers
openstack / manila
Watch 35
Star 80
Fork 51
Code
Pull requests 0
Projects 0
Pulse
Graphs
Branch: master
manila / manila / share / drivers /
Create new file
Find file
History
Jenkins committed with openstack-gerrit Merge "[ZFSonLinux] Fix share migration using remote host"
Latest commit 0475c15 6 days ago
..
cephfs cephfs_native: enhance update_access() a month ago
container Merge "Put all imports from manila.i18n in one line" 6 days ago
emc Put all imports from manila.i18n in one line 6 days ago
ganesha ganesha: implement update_access 3 months ago
glusterfs Merge "Put all imports from manila.i18n in one line" 6 days ago
hdfs Removing some redundant words 6 months ago
hitachi Merge "Add cleanup to create from snap in Manila HNAS driver" 6 days ago
hpe Put all imports from manila.i18n in one line 6 days ago
huawei Merge "Put all imports from manila.i18n in one line" 6 days ago
ibm Refactor GPFS driver for NFS ganesha support a month ago
netapp Merge "NetApp cDOT driver autosupport broken" 8 days ago
nexenta Nexenta: adding share drivers for NexentaStor 19 days ago
quobyte Put all imports from manila.i18n in one line 6 days ago
tegile Correct reraising of exception 20 days ago
windows Windows SMB: implement 'update_access' method 19 days ago
zfsonlinux [ZFSonLinux] Fix share migration using remote host 6 days ago
zfssa Put all imports from manila.i18n in one line 6 days ago

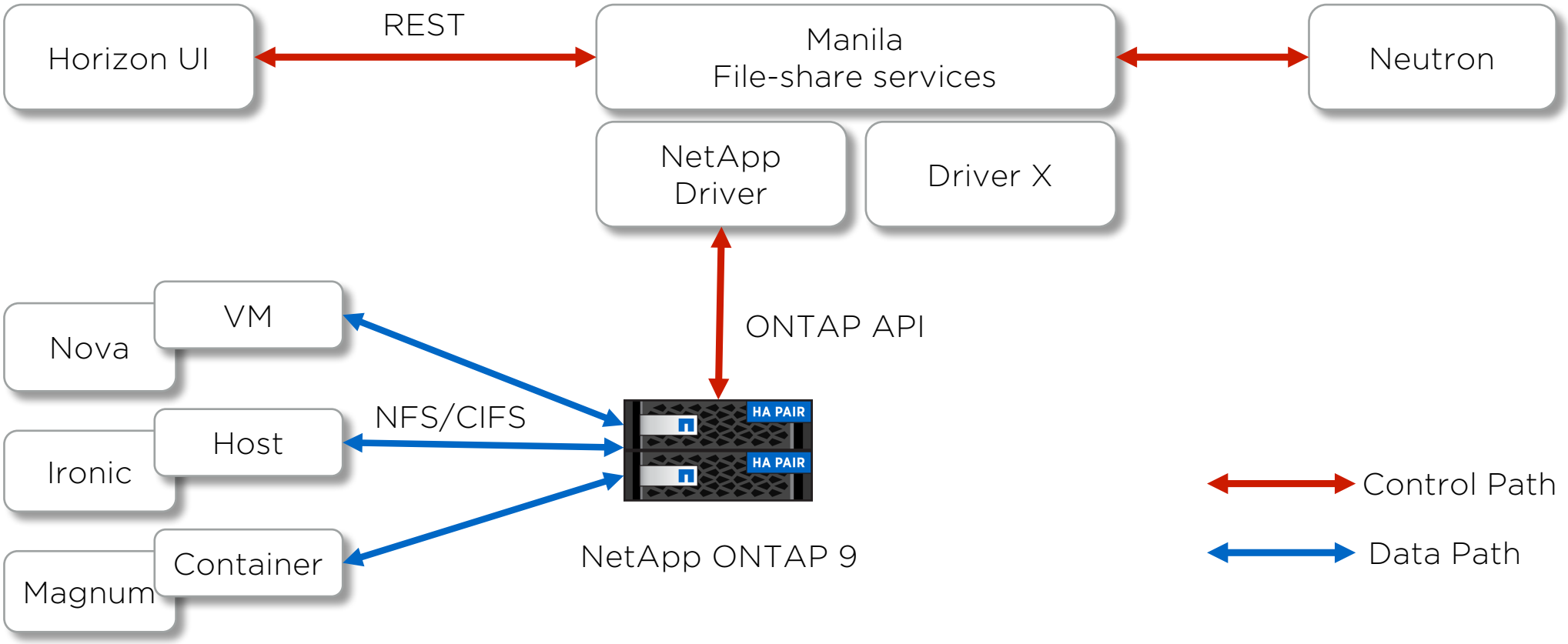


As of Sep 20, 2016

Manila: Architecture



Control & Data path



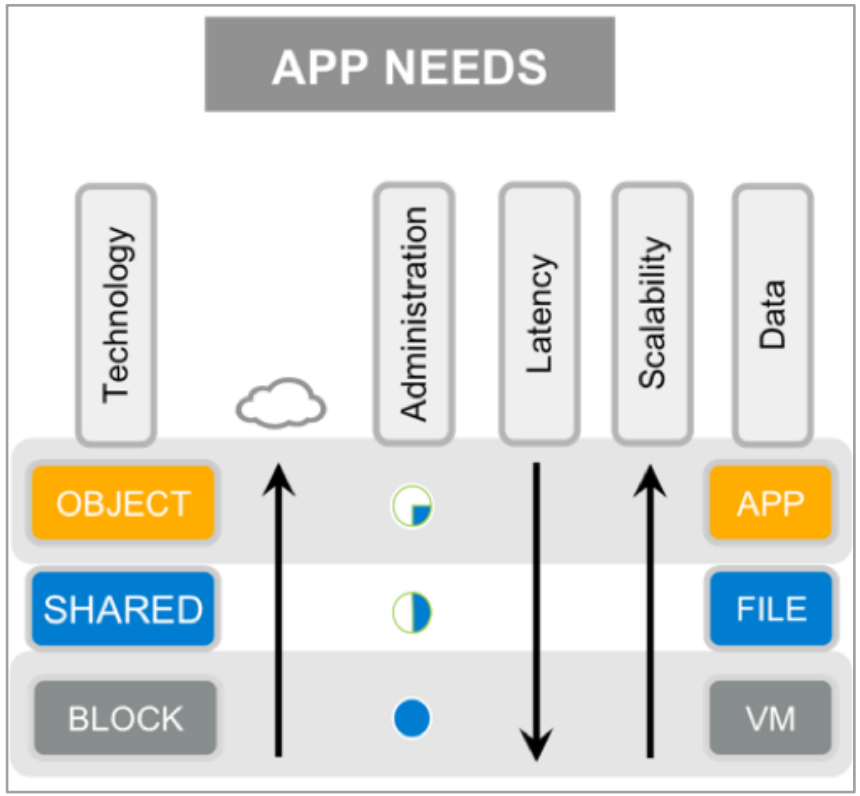
Use Cases

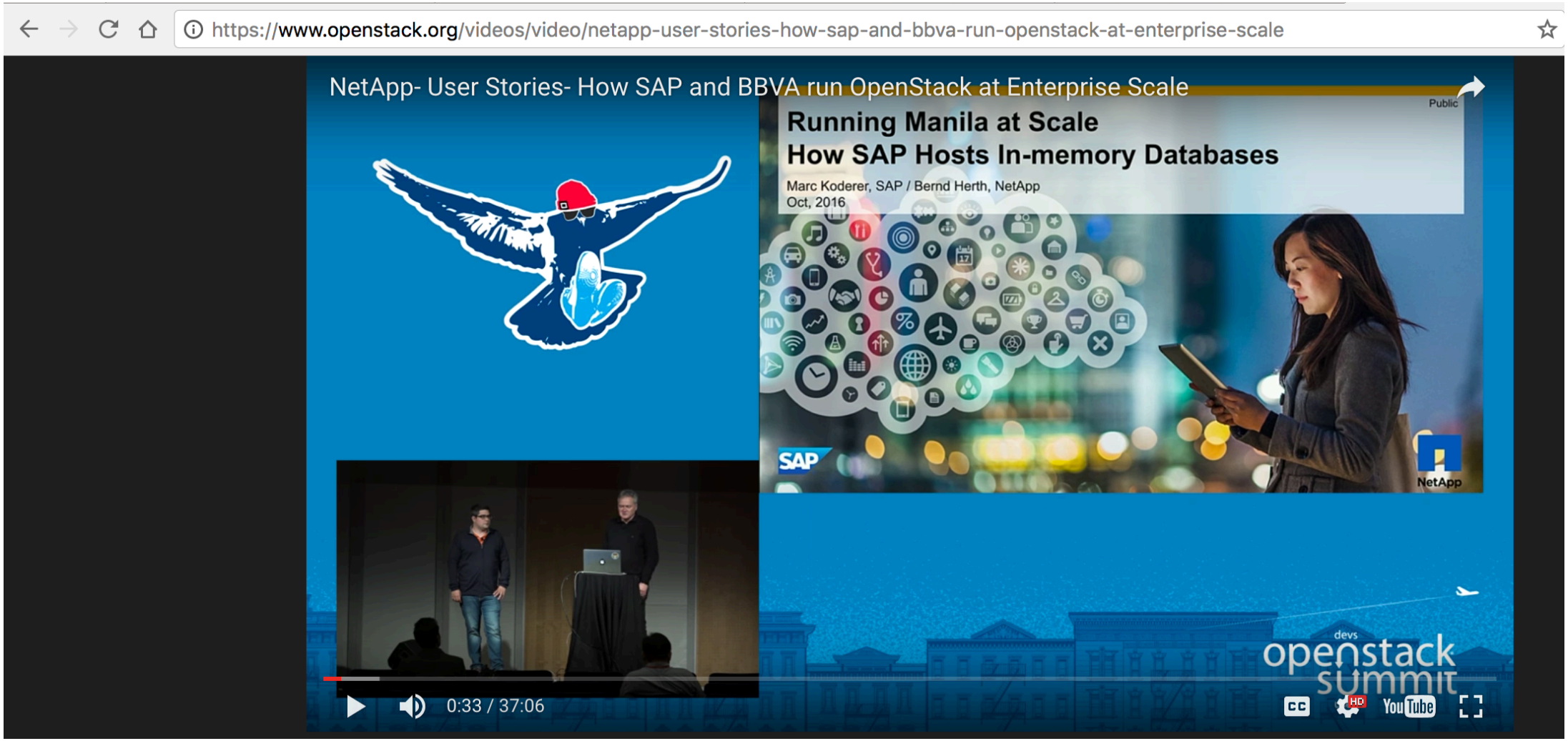
- Big Data
  - Manila's HDFS native driver plugin
  - Sahara integration
- Database as a service
- Support legacy enterprise applications
- Cross-tenant data sharing
- On-demand development and build environments
  - Continuous integration
- Hybrid cloud shares
  - External consumption of shares
  - Migration of workloads to the cloud from on-premises file shares

Move Traditional Enterprise Applications to OpenStack

Move workloads to OpenStack clouds without rewriting them

- Many applications assume the existence of a shared file system, and would need to be rewritten to be ported to an object-storage API.
- Manila enables the transition of workloads from existing virtualization onto OpenStack to gain lower cost, heterogeneous infrastructure.





NetApp: User Stories: How SAP and BBVA run OpenStack at Enterprise Scale

Speakers

Manila/SAP enterprise team

< Manila

Mission

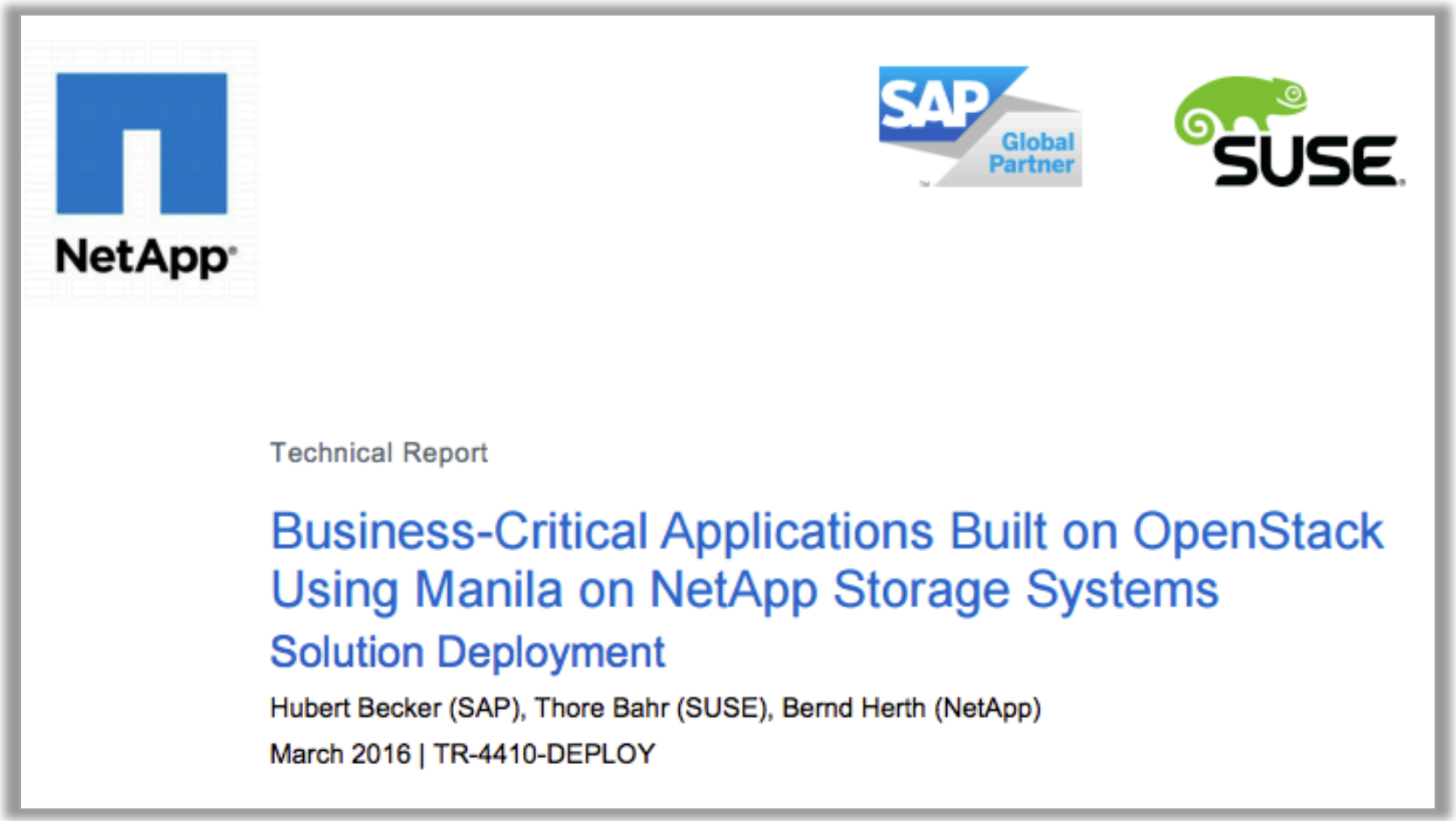
The SAP Manila enterprise team tries to address topics to make Manila enterprise ready. The listed topics can be bugs, features or even long run

Open Topics:

No	Issue	Description	Priority	BackPort	Assigne	Referenc
1	Snapshot: Make it possible for users to specify "full copy clones" or "copy-on-write clones"	In order to speed up the rollout the concept requires to 'clone a template' , where a template is a snapshot of a master volume and clone resolves into a snapshot (manila create --snapshot)	A		NetApp	NetApp cDOT driver configurable cl Define a NetApp extra spec that is u that selects whether an initial clone of the create-from-snapshot workflo configurable clone split NetApp cDOT driver configurable cl snapshot

Technical Report

http://www.netapp.com/us/media/tr-4410-deploy.pdf



Technical Report

Business-Critical Applications Built on OpenStack Using Manila on NetApp Storage Systems

Solution Deployment

Hubert Becker (SAP), Thore Bahr (SUSE), Bernd Herth (NetApp)

March 2016 | TR-4410-DEPLOY

NetApp

OpenStack shared file storage for the NFV telco cloud

Deutsche Telekom

- > 150 million mobile customers
- > 29.8 million fixed network customers
- > 17.4 million broadband customers
- ~ 5.8 million TV customers

Facts and Figures

- € 60.1bn revenue
- € 17.6bn adjusted EBITDA
- #89 Fortune 500
- 228,00 employees worldwide

Challenge:

- DT has more than 20PB shared storage for online and mobile-related services in Germany
- Moving forward, shared storage with all its features needs to be available within OpenStack
- Needs for shared storage due to low latency requirements (for example, e-mail: index and mail body)

Evaluation:

- NetApp, Deutsche Telekom, SVA, and HDS have evaluated Manila
- Manila evaluation phase 2 results: https://www.openstack.org/videos/video/canonical-zfs-ceph-and-swift-for-openstack-and-containers-with-manila-at-deutsche-telekom

DevOps and Continuous Integration

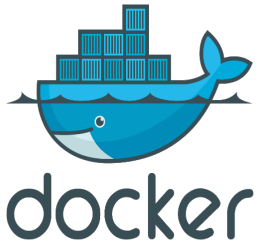
Speeding up large development and test suites through parallel testing

Challenge

- Speed up development and test refresh

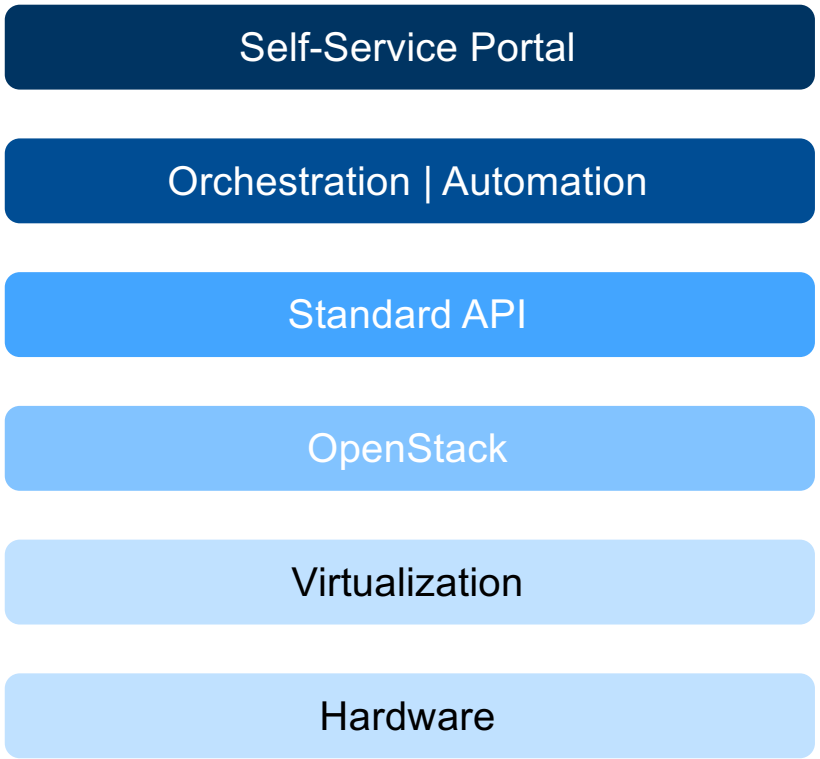
Solution

- Run tests in parallel by leveraging containers and **cloned** Manila shares



DBaaS usecase @ An Insurance Company

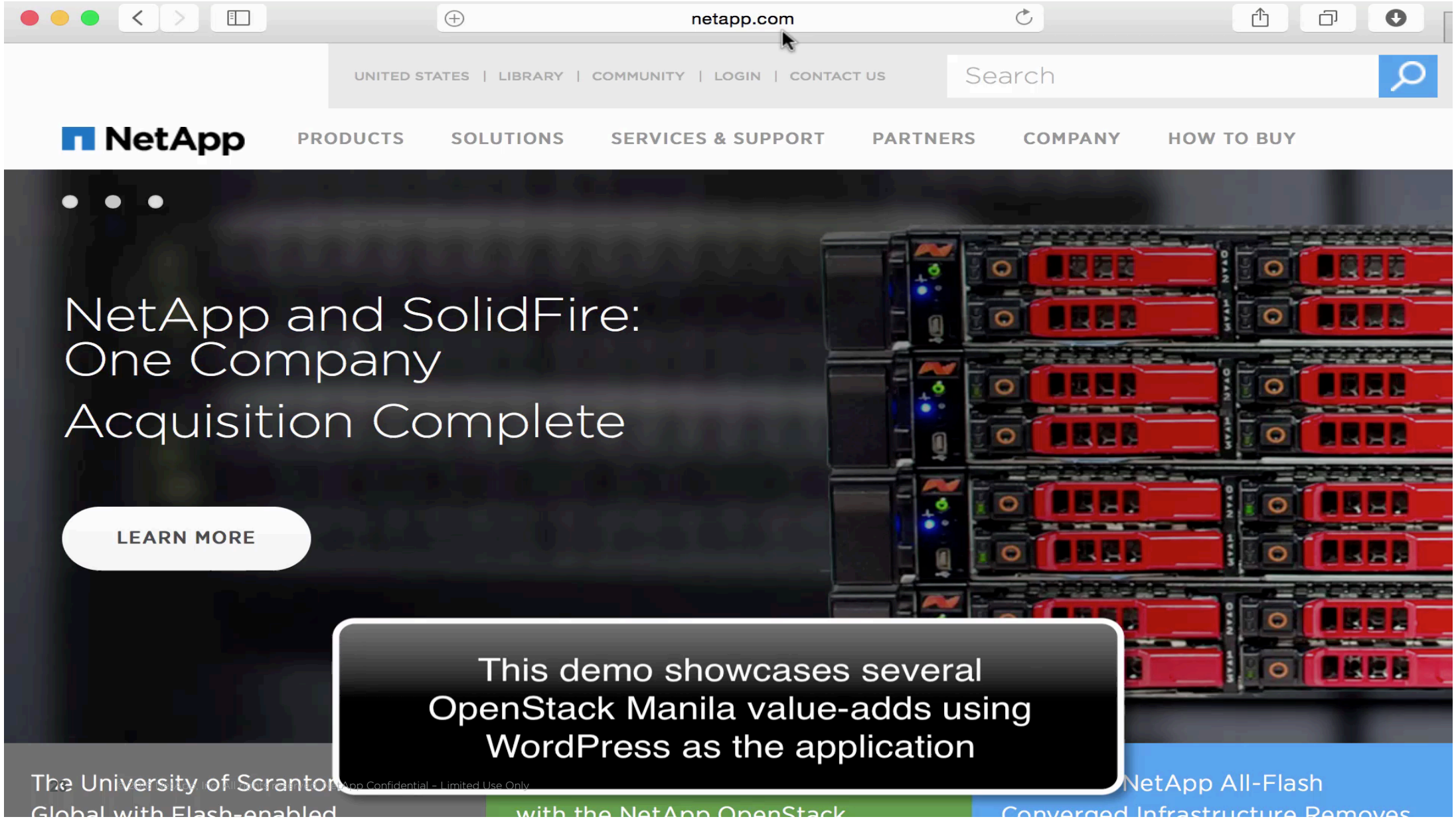
- Oracle
- SQL Server
- Automation/Orchestration
- VMware
- Manila
- Chef
- Self-service portal



Magic of Manila Manage

Magic of Manila Manage

- Large volumes of NFS or CIFS data to be imported
- Use Case:
  - Hosting Providers
  - Enterprise IT : user home directories, critical workloads
  - Applications moved into OpenStack, and using file-shares. ex. SAP
- Demo Activities:
  - Share Management
  - Share Creation
  - Share Size Extend/Shrink
  - Snapshots
  - Replication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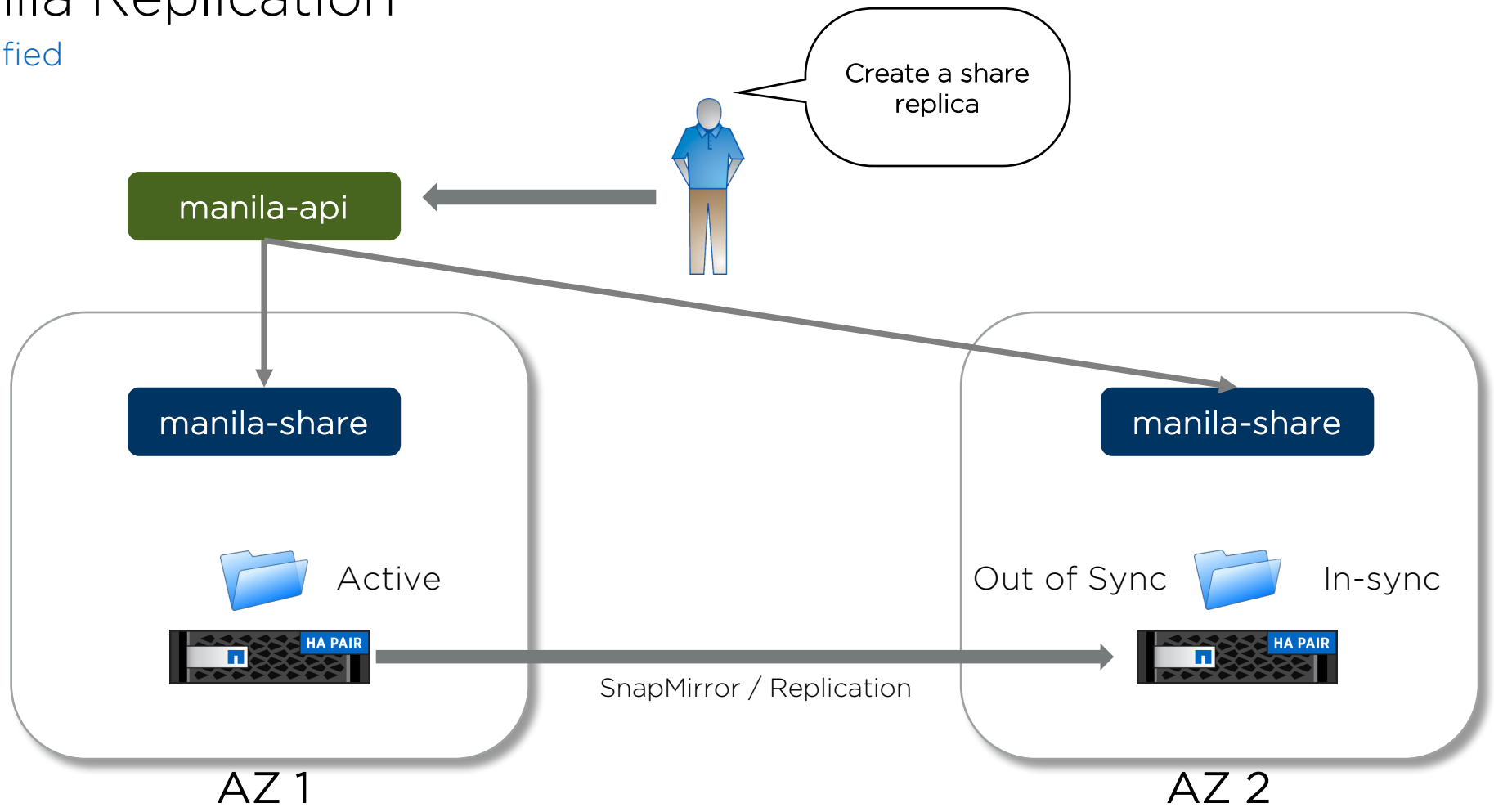
This demo showcases several
OpenStack Manila value-adds using
WordPress as the application
The University of Scranton
NetApp All-Flash

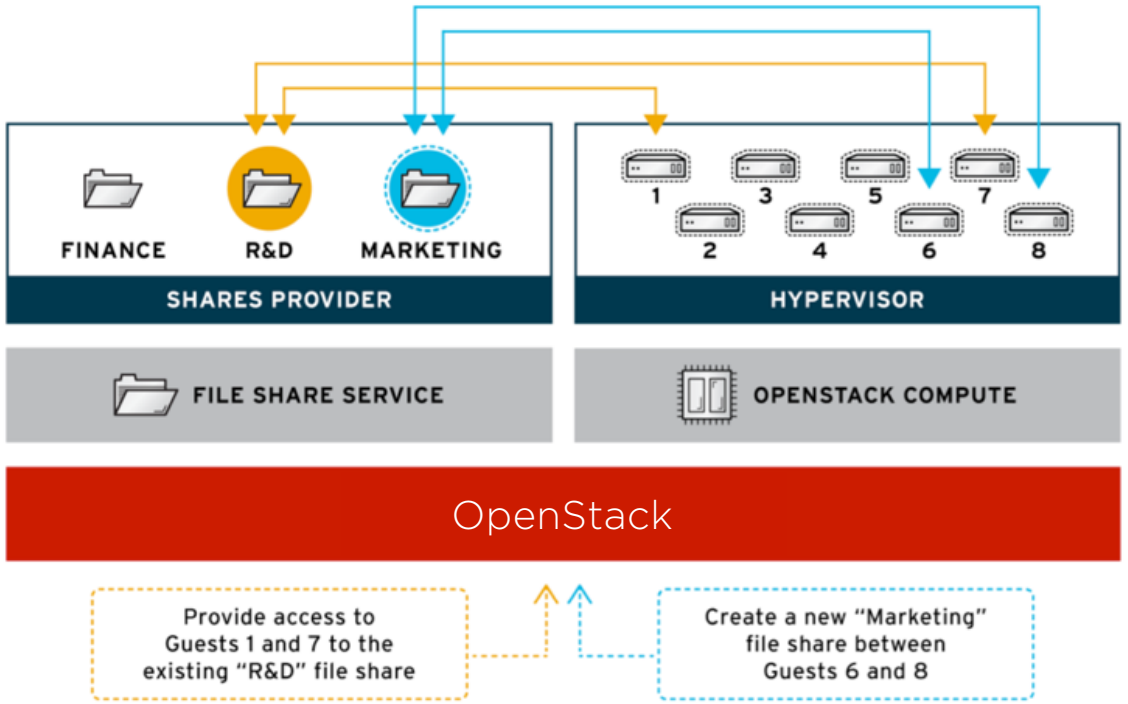
Manila Replication

Simplified



How to Deploy Manila

- Available in the **OpenStack RDO** community-supported distribution (via PackStack).
  - Guide available on netapp.github.io
- The Manila File Share service is included in RHEL OpenStack Platform 8 as a Tech Preview – includes support for Manila UI plugin.
- Mirantis: Fuel plug-in available for MOS 9.0. NetApp and Generic drivers supported.
- SUSE OpenStack Cloud 6 and above, crowbar integration for NetApp and CephFS (version 7).



Getting started

Test Drive

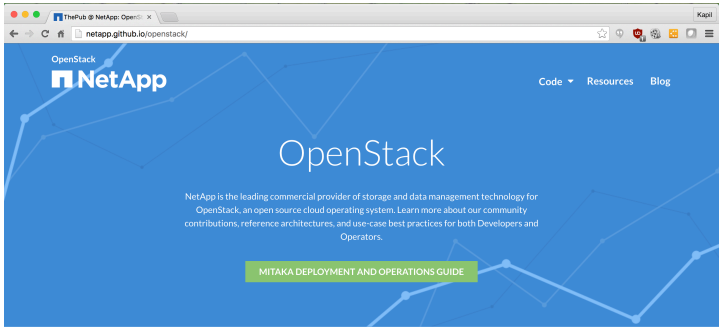
A self-directed exploration of NetApp's unique advantages for Manila, Cinder, and Glance

http://cloud.netapp.com/testdrive-cloud-ontap-with-openstack

NetApp github website

One stop page for all OpenStack resources

http://netapp.github.io/openstack/



Get Involved!

- Manila on GitHub: https://github.com/openstack/manila
- Manila Wiki Page: https://wiki.openstack.org/wiki/Manila
- IRC: **#openstack-manila** on **freenode**
- NetApp: http://netapp.io/openstack
  - Take a test drive!
  - Deployment and Operations Guide
  - Blog
- Mirantis:
  - Fuel Plugin Source: https://github.com/openstack/fuel-plugin-manila
  - Fuel Plugin Packages: https://www.mirantis.com/validated-solution-integrations/fuel-plugins/
- SUSE:
  - Crowbar installer: https://github.com/crowbar/crowbar-openstack

Questions?

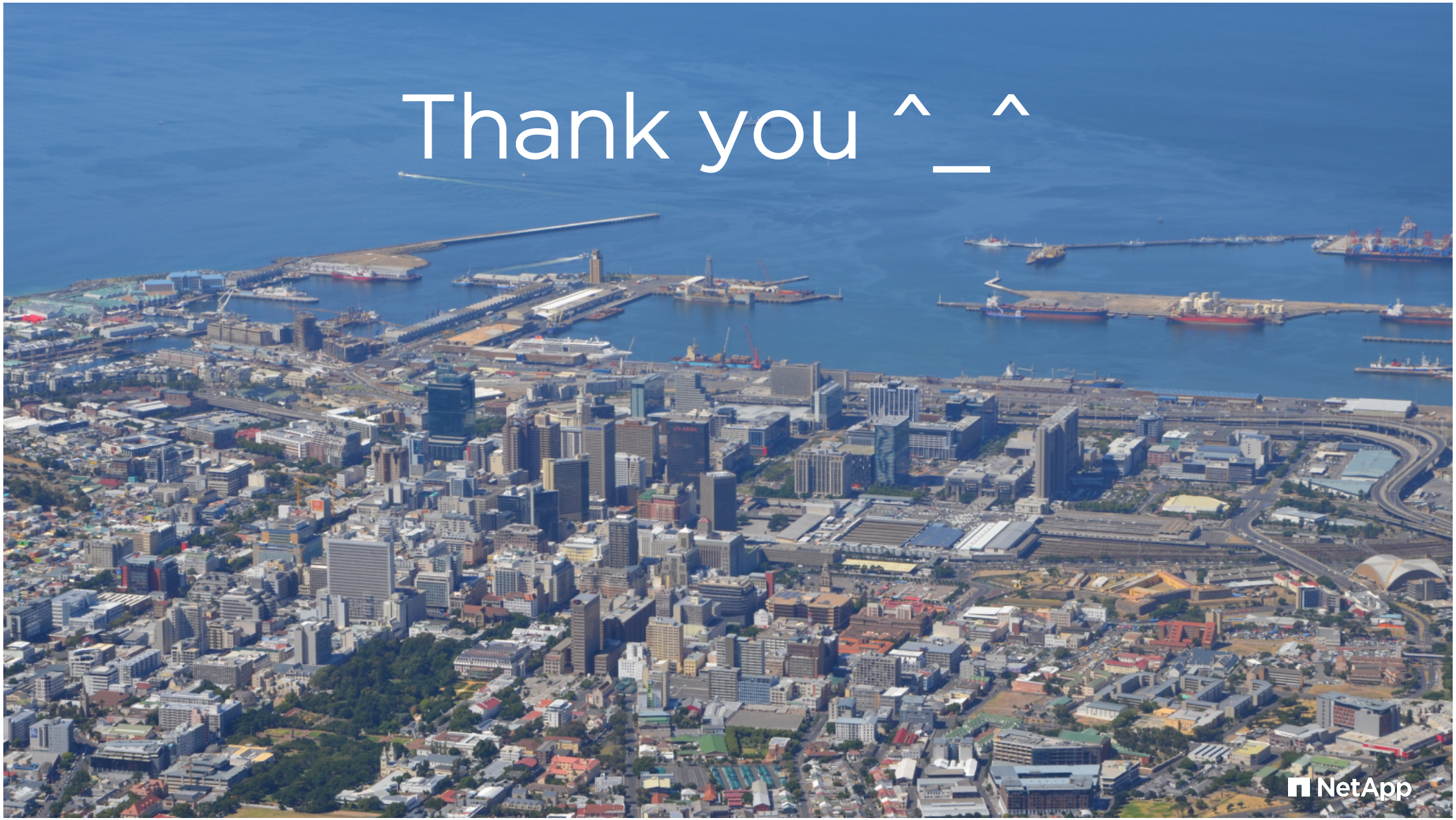
Get in touch!

http://kapilarora.de

@kaparora

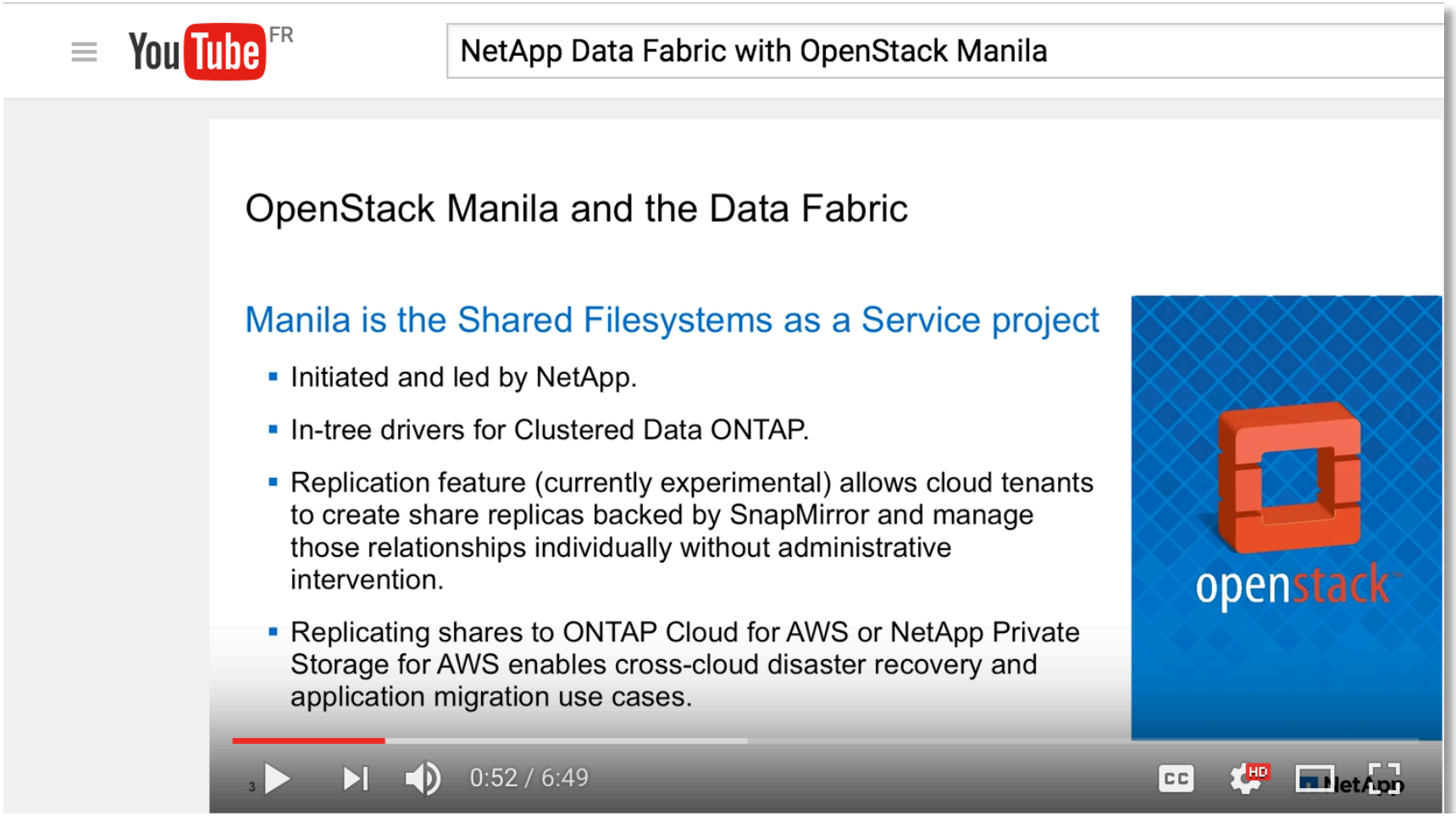
https://github.com/kapilarora

https://www.linkedin.com/in/kaparora


Thank you ^_^
NetApp

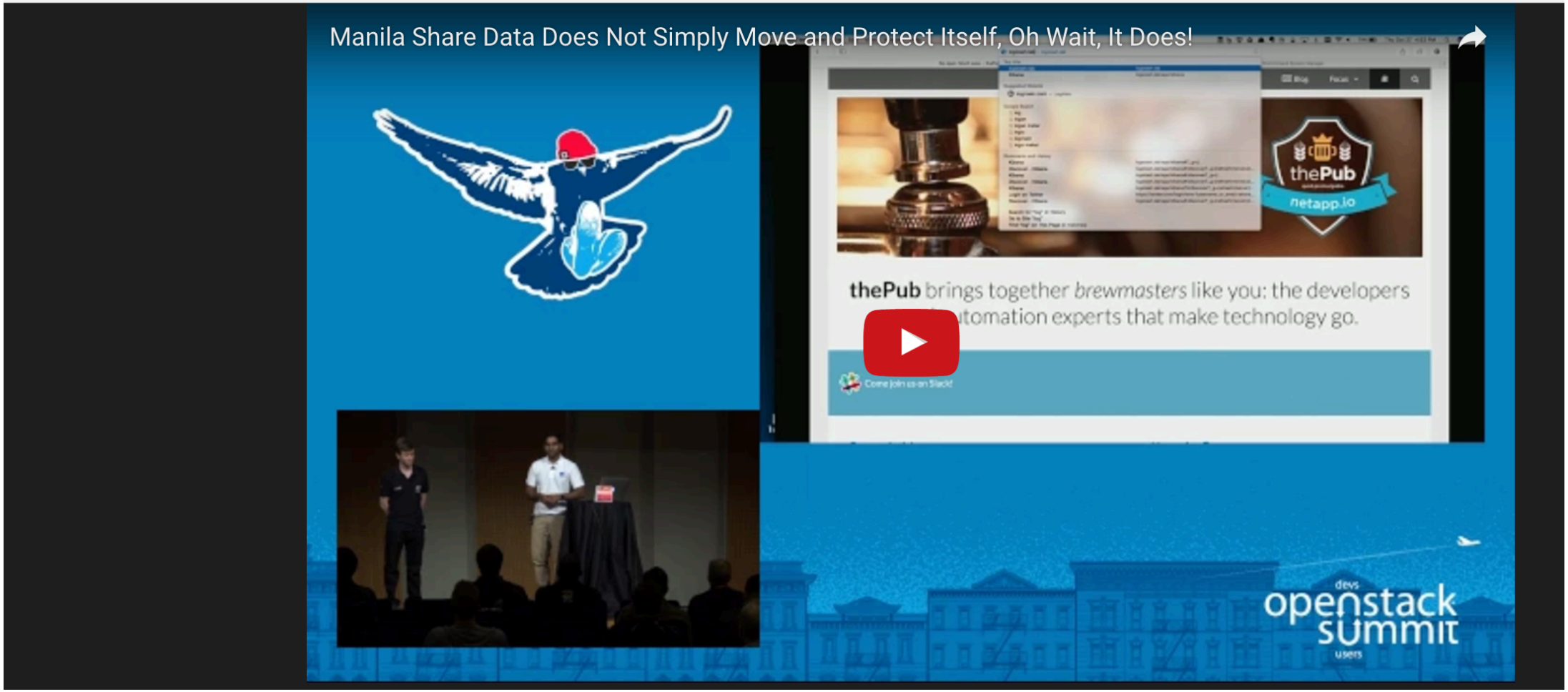
Demo Video: OpenStack Manila and Hybrid Cloud

https://www.youtube.com/watch?v=oHrtoH7ge7Q



NetApp

https://www.openstack.org/videos/video/manila-share-data-does-not-simply-move-and-protect-itself-oh-wait-it-does

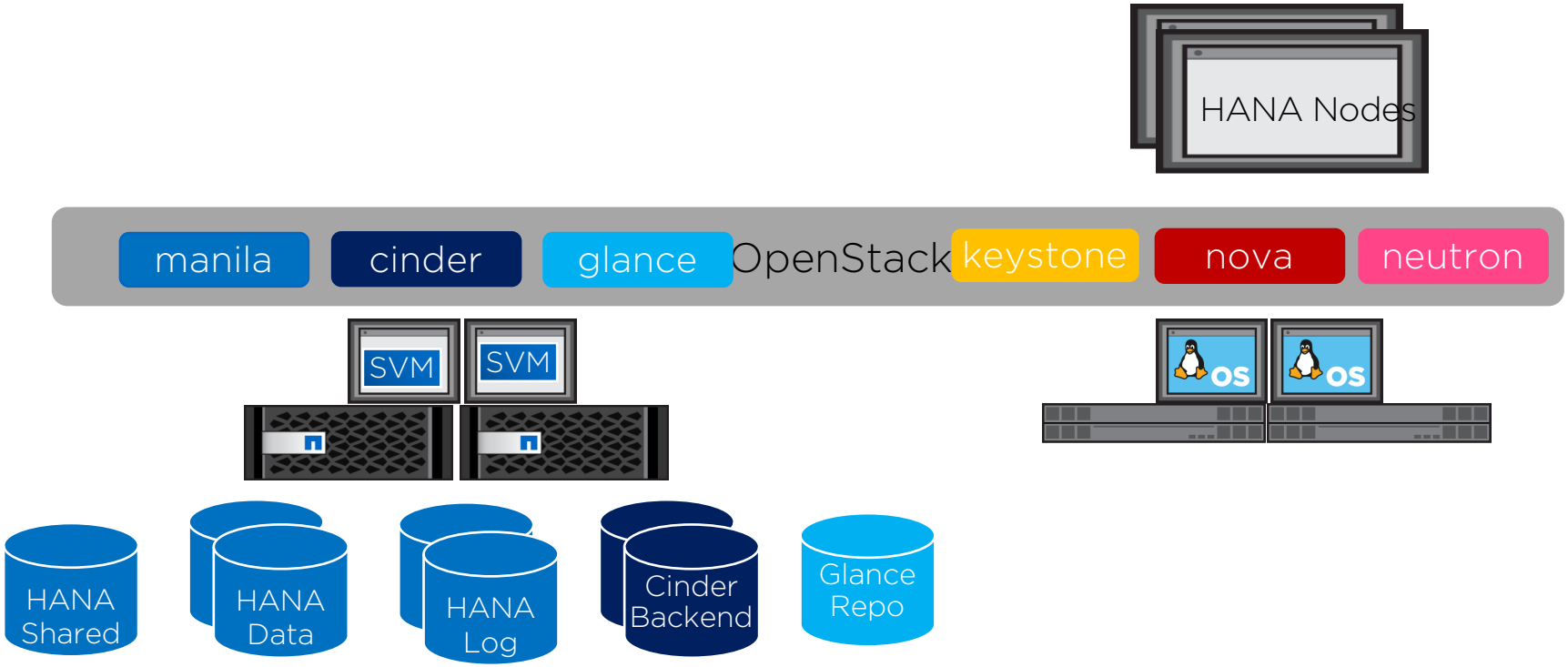


Manila Share Data Does Not Simply Move and Protect Itself, Oh Wait, It Does!

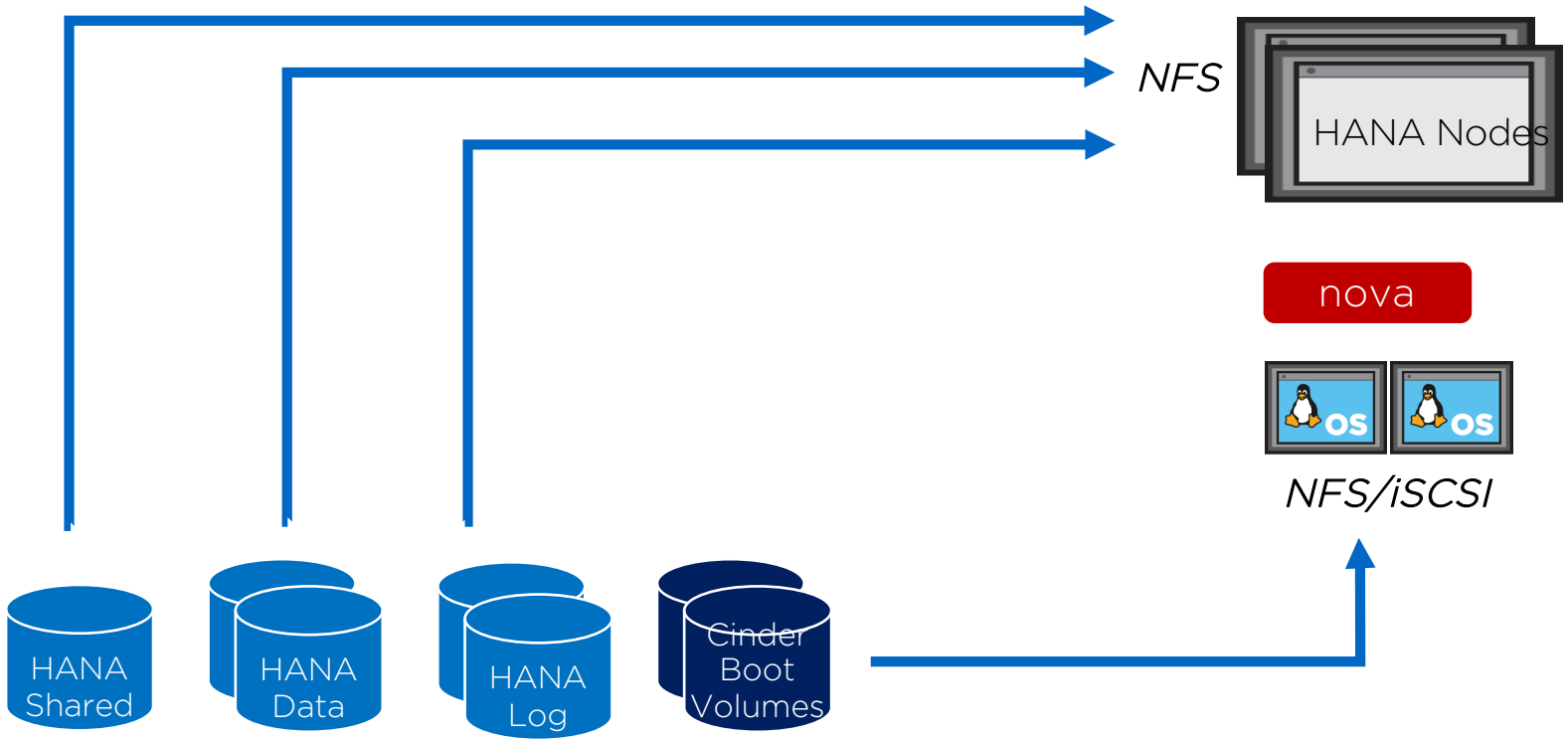
Speakers

PoC: SAP HANA on Manila

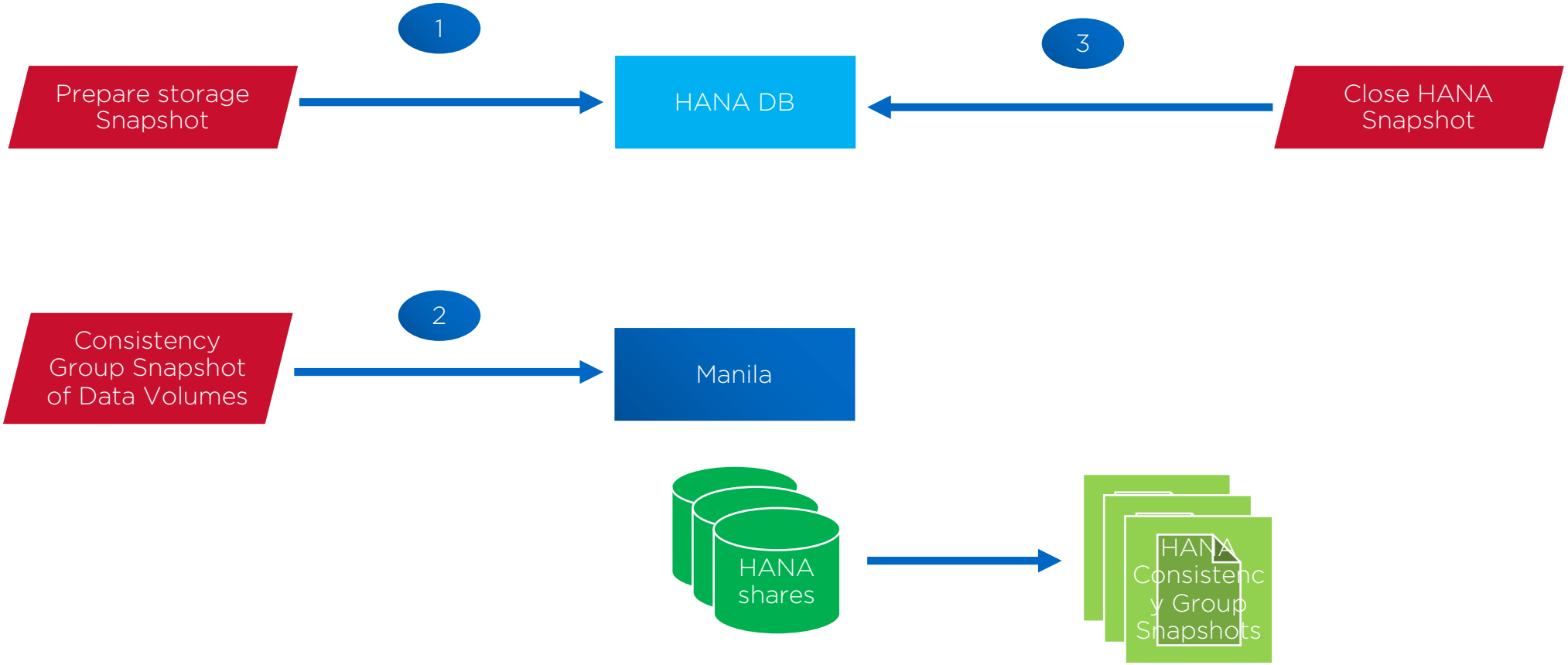
SAP HANA on OpenStack



Data Path



HANA Backup Workflow



Demo Video: SAP HANA PoC

https://www.youtube.com/watch?v=DPS6FAJp0_U

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Manila and Sahara @ OpenStack Summit Tokyo

https://www.youtube.com/watch?v=Tf_8v0OvR80

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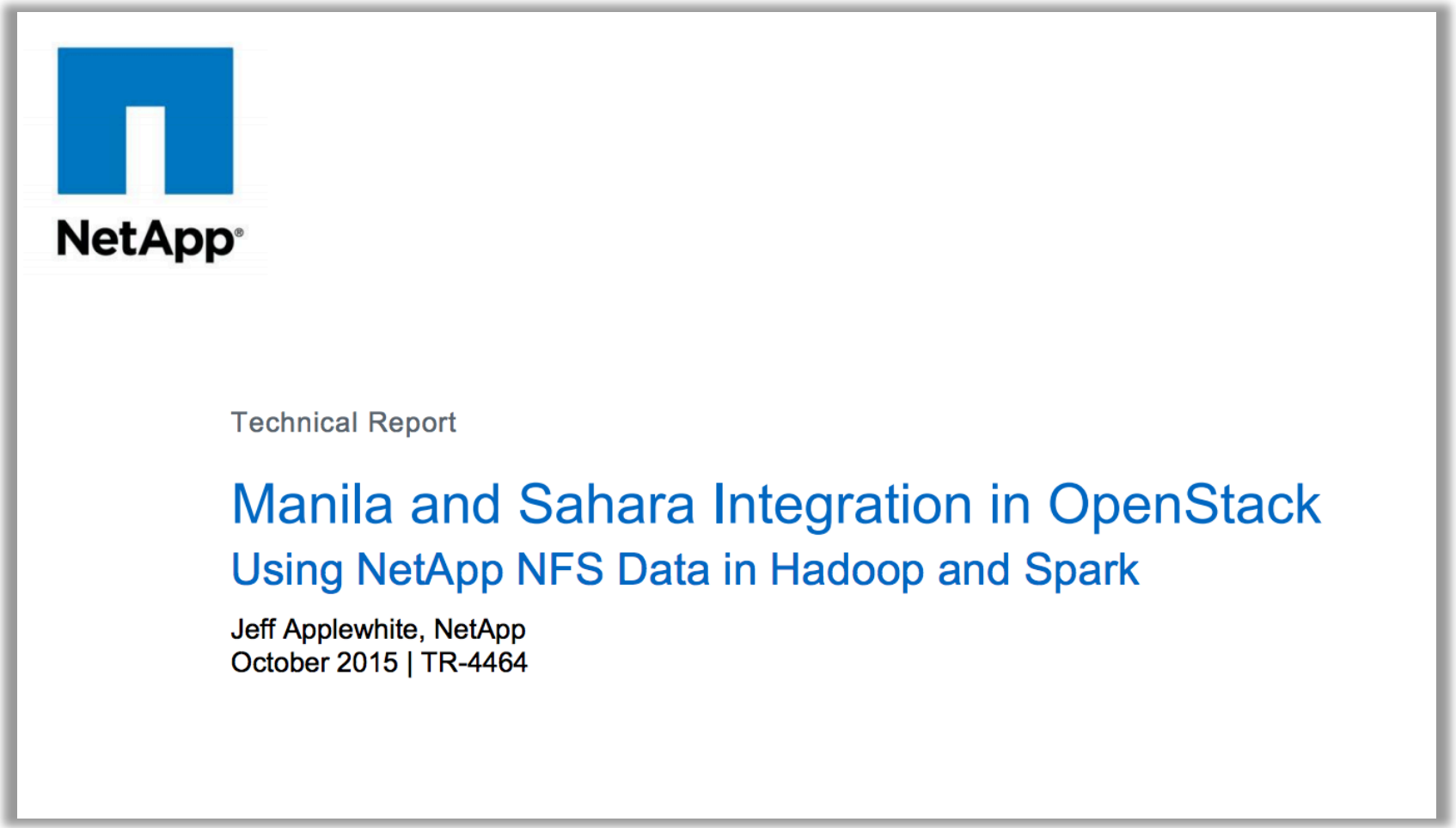
Technical Report

https://www.netapp.com/us/media/tr-4464.pdf



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Technical Report

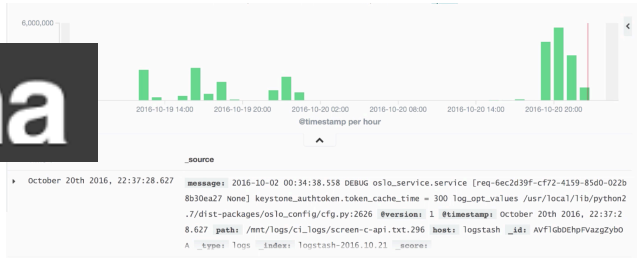
Manila and Sahara Integration in OpenStack

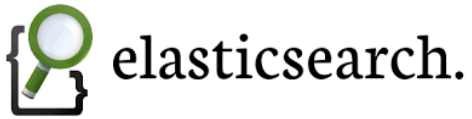
Using NetApp NFS Data in Hadoop and Spark

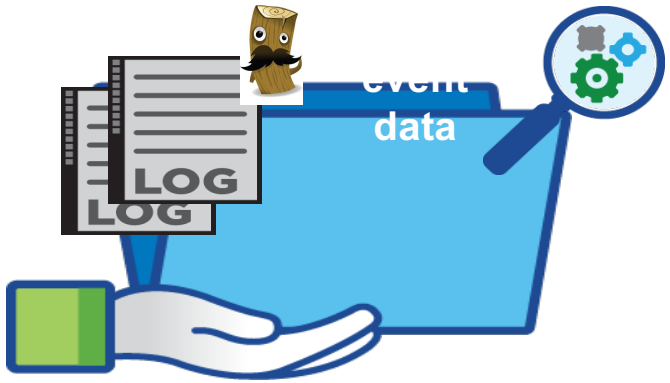
Jeff Applewhite, NetApp

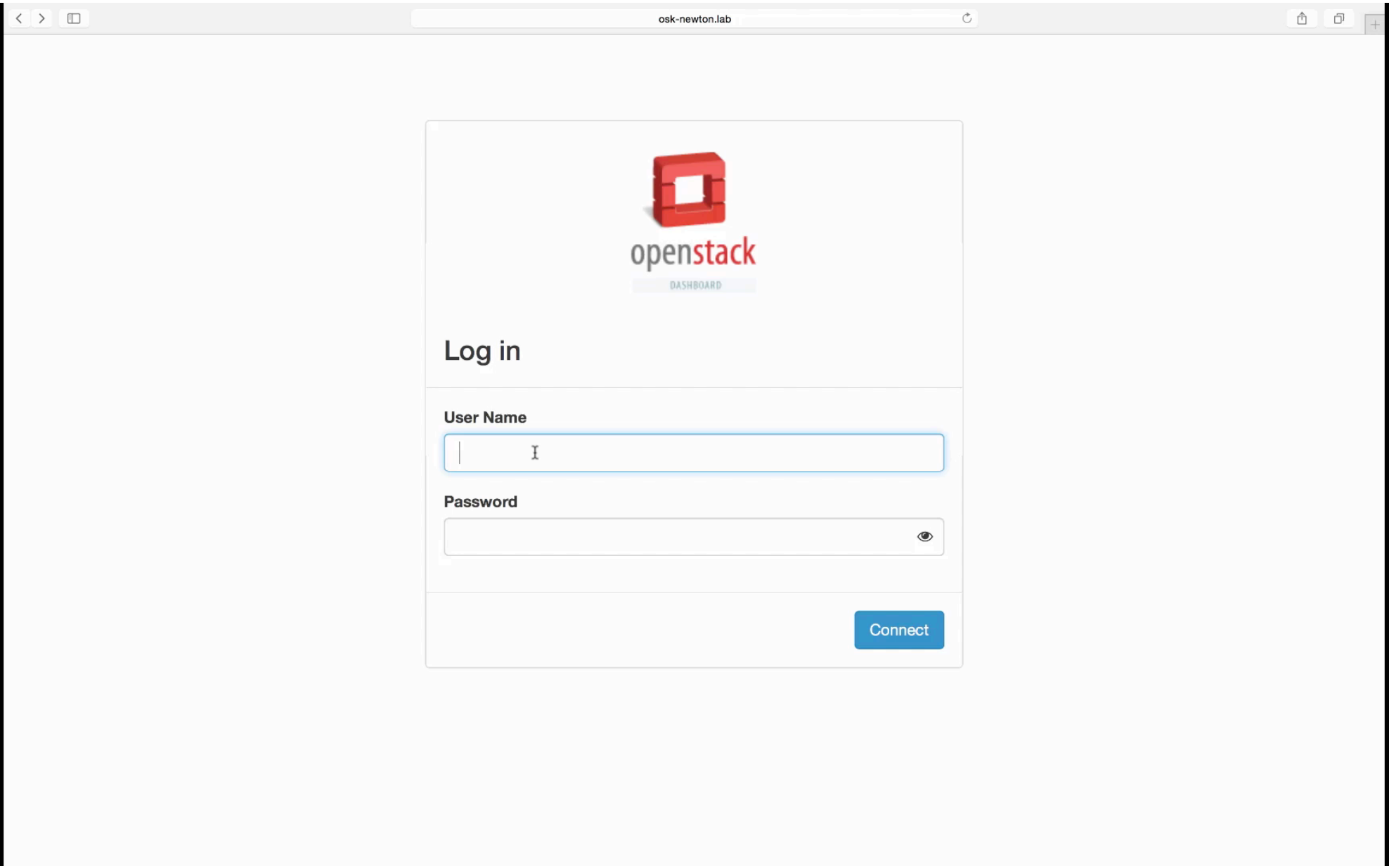
October 2015 | TR-4464

NetApp





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