



Accelerating Digital Transformation On-Prem and on the Edge

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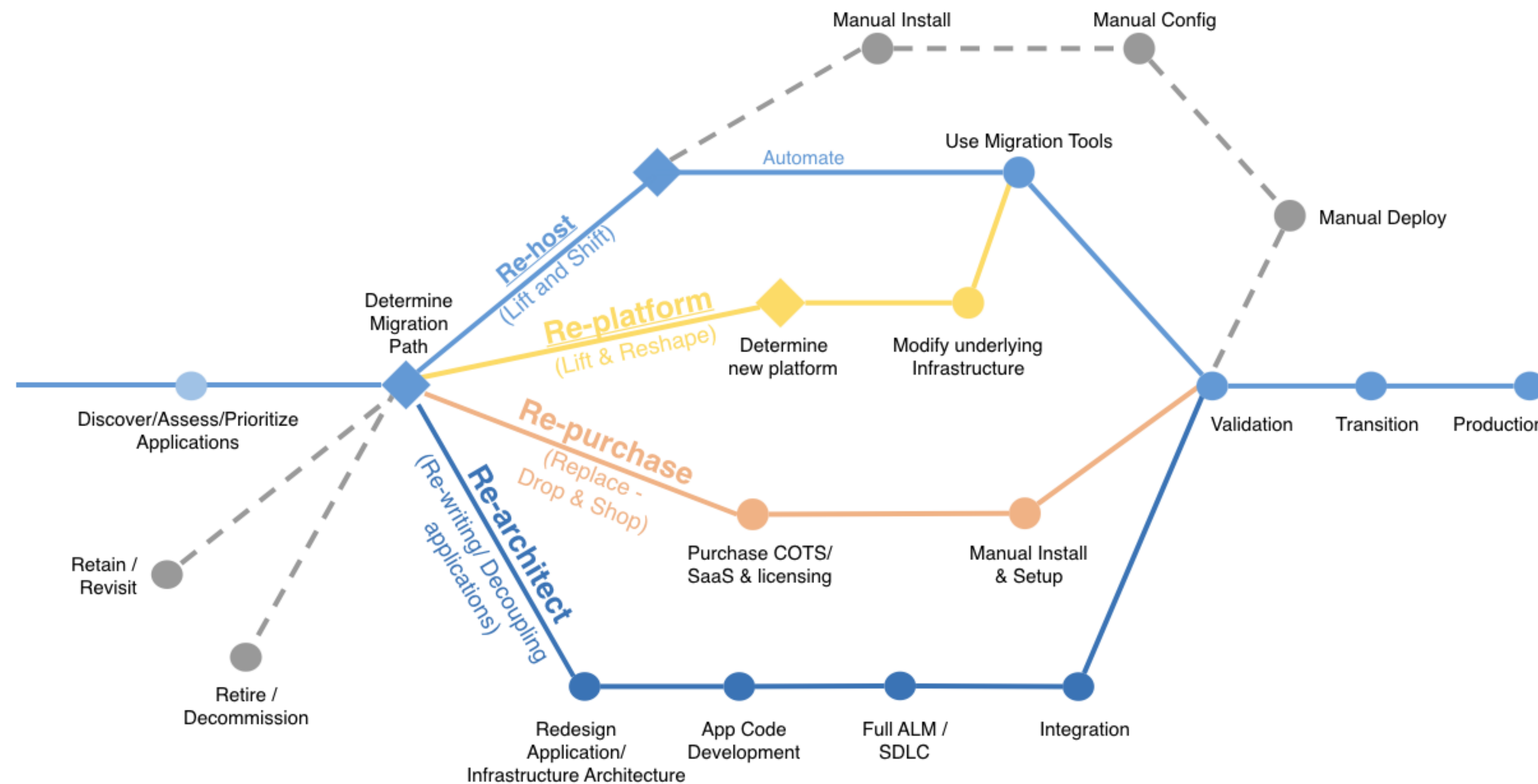
The context

- + Companies move to the next dev / ops generation
- + Physical Servers -> VMs -> IaaS -> Containers -> Serverless
- + Rewrite LoB next gen applications while retaining investments on existing generation
- + Improve TCO
- + Cost driven return from public clouds to on-prem
- + New Edge scenarios

Why migrating workloads?

- + In general: improved TCO
- + New on-prem cloud infrastructure
- + New on-prem hardware
- + On-prem to public cloud
- + Public cloud to on-prem
- + On-prem redeployment

What are the options?



Picture: Stephen Orban: buff.ly/2jZF5yv

Rehost (lift and shift)

Move VMs or bare metal hosts to the new cloud

Examples:

VMware to OpenStack, AWS to Azure, AWS to OpenStack, etc

Pros:

Servers are “black boxes”, no need for changes
Fastest option

Cons:

Won't take full advantage of cloud model (e.g. scalability)
Target cloud solution might not have host level HA, so HA might be lost from source environment

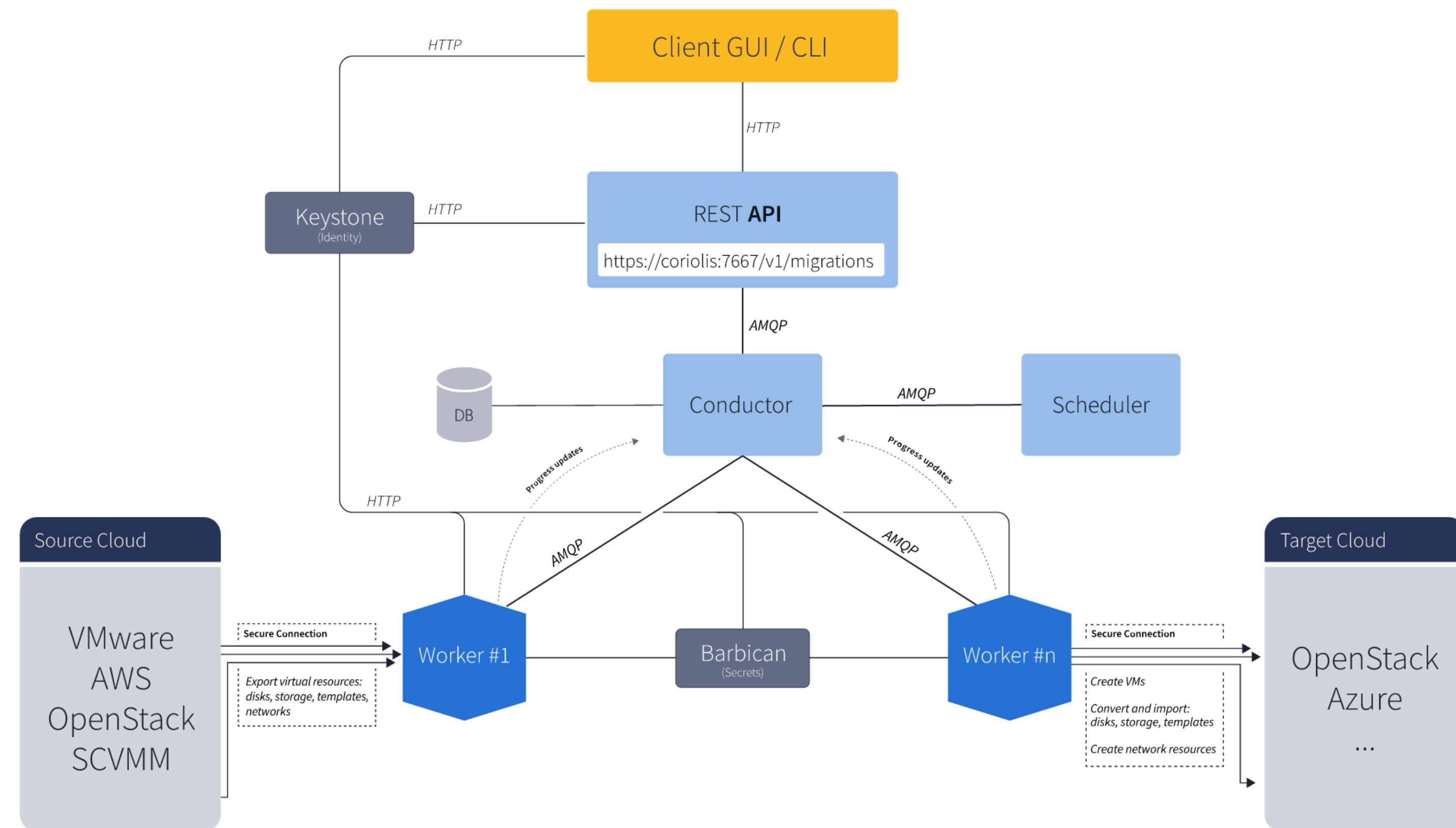
Lots of steps

- + virtual disk format
- + synthetic kernel drivers (VirtIO, VMware tools, LIS, etc)
- + initrd
- + SELinux
- + PCI ids / network configuration
- + Provisioning agents (cloud-init / cloudbase-init, Azure WALinuxAgent, etc)

Introducing Coriolis – Migration as a Service

- + Fully automated lift-and-shift migrations from and to any cloud / virtualization solutions
- + Scalable: do 1 migration or 1000 at a time
- + Rest API for full automation
- + Keystone identity management

Coriolis architecture



Supported clouds / virtualization solutions

- + OpenStack
 - KVM, Hyper-V, ESXi, Xen
- + Azure
- + AWS
- + Oracle OCI / OCI classic
- + VMware vSphere
- + Hyper-V and SCVMM
- + XenServer
- + oVirt + KVM
- + Oracle VM
- + Kubernetes + KubeVirt

OS morphing

- + Needed when a guest instance moves between different platforms and architectures
- + A worker VM detects the OS type / distro
- + Actions specific to that OS and target platform are executed (e.g. add VirtIO driver, add cloud-init, etc)

Supported operating systems

- + RHEL / CentOS / Oracle Linux 5+
- + Debian 7+
- + Ubuntu 12.04+
- + SUSE SLE 11+
- + Fedora
- + OpenSuse
- + Windows 7, 8, 8.1, 10, 11
- + Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016, 2019, 2022

Coriolis CLI

CLI is based on cliff, like the OpenStack client

migration cancel

Cancel a migration

migration create

Start a new migration

migration delete

Delete a migration

migration list

List migrations

migration show

Show a migration

Coriolis GUI

- + Single page application
- + ReactJS
- + Open Source

 CORIOLIS

[Migrations](#)

Cloud Connections

Action Log



Migrations

My-Project

New Migration

Pat Bentar

pat.bentar@coriolis.ui

Profile

Plans

Billing

Sign Out

[In Progress](#) | Completed | Migrations | Replicas | [All](#)

☐	 Migration-1 PAUSED	vmware	>	openstack.	Created 02 march 2017, 18:30	Tasks remaing 20 of 75	Current instance vm_name_1
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Stop

1 of 10 migration(s) selected

What about downtime?

- + Coriolis introduces a **DRaaS** feature (disaster recovery as a service) called replica
- + If the source cloud allows it, data is backed up incrementally to the target while the source VM is running
- + Migration is performed as the last step directly on the target cloud
- + No need for the source VM to be available (useful in case of disaster)

RPO and RTO

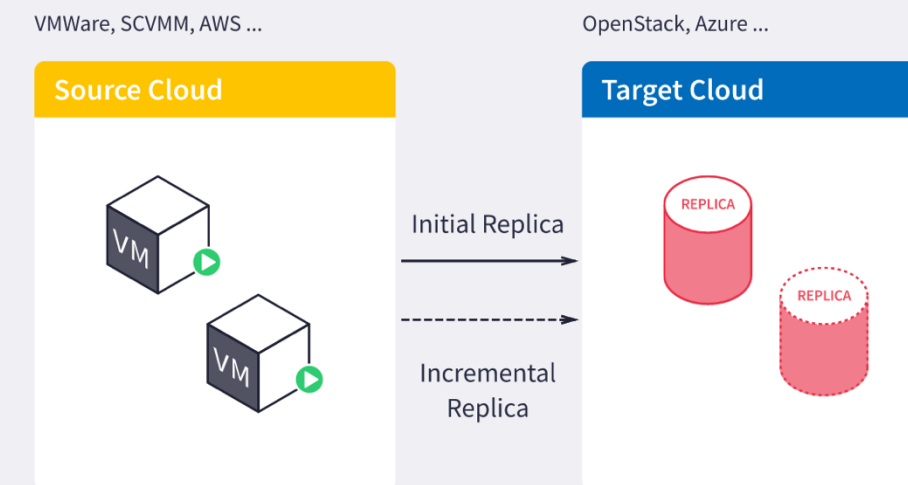
- + Recovery Point Objective (RPO): last replica execution
- + Recovery Time Objective (RTO): migration from replica (30s - 5m)

- + Stage 1: replica
- + Stage 2: migration

Coriolis v2 Replica Migration and Workload Validation

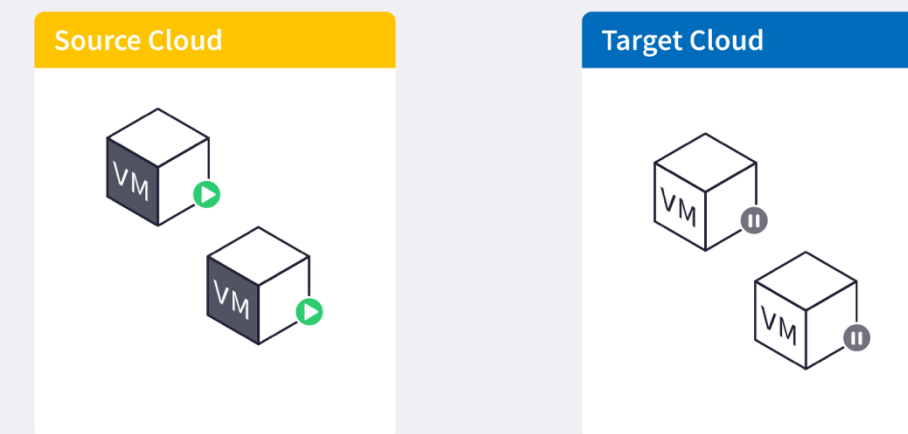
1. Replica Creation

A virtual workload replica is created on the target cloud. Subsequent incremental updates keep the target up to date.



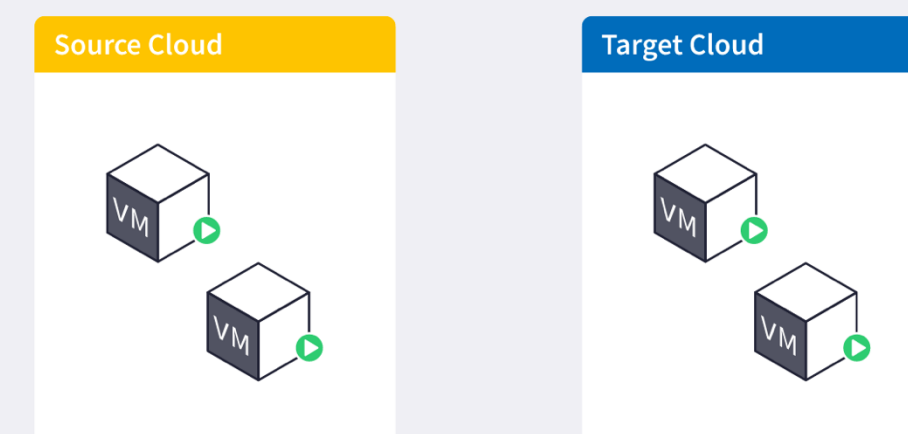
2. Migration

VMs are created on target from the replica, while source VMs run unaffected.



3. Validation

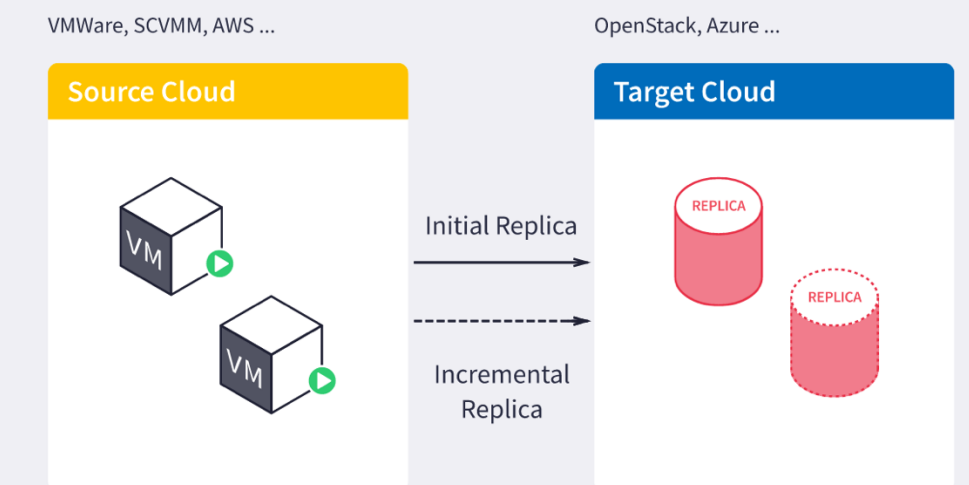
The newly created VM workloads can be tested and validated.



Coriolis v2 Finalized Replica Migration

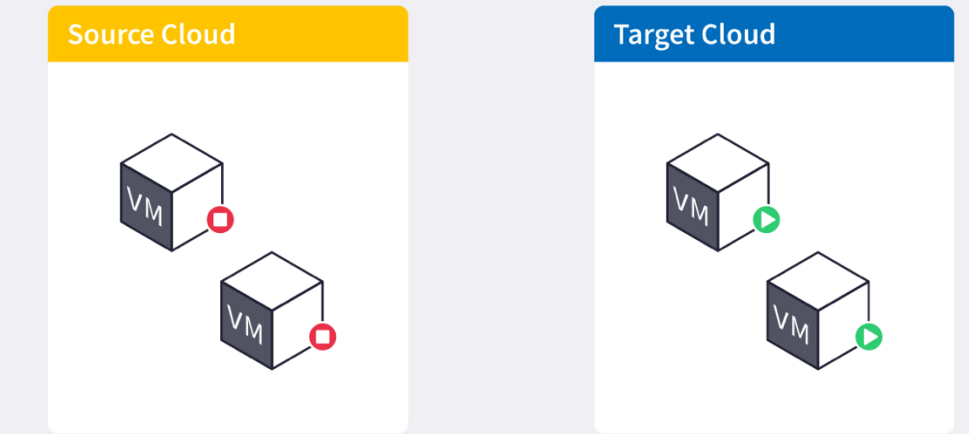
1. Replica Creation

A virtual workload replica is created on the target cloud. Subsequent incremental updates keep the target up to date.



2. Migration

VMs are created on target from the replica, while source VMs are stopped if required.



Kubernetes on-prem / edge

- + Magnum in OpenStack needs improvements (e.g. cluster upgrades)
- + Solution: New CAPI based Magnum driver
- + Support for Flatcar Linux as k8s OS image in Magnum
- + What about Kubernetes on bare metal?
- + BMK: k8s bare metal project made of standard OSS components

Get in touch

Twitter: @cloudbaseit

<http://www.cloudbase.it/coriolis>

<http://ask.cloudbase.it>

Questions?