

Operator Lifecycle Manager

0.7.x

Late 2017...

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Tectonic 1.8 and the Open Cloud Services Catalog are now available

December 19, 2017 • By Neil McAllister

Tags: [announcements](#) [Tectonic](#) [Open Cloud Services](#) [Kubernetes](#)




Today we're proud to announce Tectonic 1.8, the latest release of our enterprise-ready Kubernetes platform, is now available. This version, which we announced ahead of [KubeCon + CloudNativeCon North America](#) earlier this month, is the first to ship with a catalog of industry-first Open Cloud Services that enable users to deploy key infrastructure components with the ease of managed cloud vendor offerings but without cloud vendor lock-in.

The first three offerings in the CoreOS Tectonic Open Cloud Service Catalog are based on etcd, Prometheus, and Vault. You can learn more about what each of these services delivers in [our previous blog post](#), and we'll dive into each of them in separate posts soon. What all Open Cloud Services share in common, though, is that they automate key operational tasks such as security updates, scaling and handling failover, making backups, and so on, allowing users to concentrate their focus on managing their applications and not the infrastructure they run on.

These powerful services are the latest building blocks in the complete Tectonic platform, which combines pure, upstream open source Kubernetes with features like authentication and authorization, monitoring and alerting, and ease of installation and management. For more information on what's new with Tectonic 1.8, [check out the release notes](#).

Tectonic 1.8 Dashboard with OCS

TECTONIC
by CoreOS

Applications

Available Applications

Open Cloud Catalog

Workloads

Daemon Sets

Deployments

Replica Sets

Replication Controllers

Persistent Volume Claims

Stateful Sets

Jobs

Pods

Config Maps

Secrets

Resource Quotas

Open Cloud Services

Routing




Troubleshooting

Open Cloud Services

NAME	PROVIDER
Open Cloud Services	CoreOS, Inc

Applications

Filter Applications by name...

NAME ↑	STATUS
 etcd 0.6.1 by CoreOS, Inc	Enabled (1 namespace) Show namespace
 Prometheus 0.14.0 by CoreOS, Inc	Enabled (1 namespace) Show namespace
 Vault 0.1.3 by CoreOS, Inc	Enabled (1 namespace) Show namespace

What is the Operator Lifecycle Manager (OLM)?

OLM is the..

Installation (`InstallPlan`)

Definition (`ClusterServiceVersion`)

Resolution (`CatalogSource`)

Upgrading (`Subscription/Package`)

of....

3 Files:
ClusterServiceVersion.yaml
Package.yaml
CRD(s).yaml

Operators!

Okay..but what **IS** it?

OLM...

- Provides an App-Store like experience for discovering and installing Operators.
- Automated upgrades for Operators.
- Provides a framework building rich, reusable UIs.
- Package management and dependency resolution.

That's all good..but seriously...

What IS IT?

An Operator.

But not just one Operator.

OLM-Operator


Two Operators.

OLM-Operator

Catalog-Operator

Package-Server

and a Deployment.



Before we dive into the details, let's take a couple of steps back and visualize our environment in the context of OLM.



Admin

OLM OpenShift Environment

accounting

marketing



User



openshift-operator-lifecycle-manager

sourceType: External

CatalogSource1
Publisher: Google

- etcd.package.yaml
- etcdbackup.crd.yaml
- etcdcluster.crd.yaml
- etcdoperator.clusterserviceversi...
- etcdoperator.v0.9.0.clusterservi...
- etcdoperator.v0.9.2.clusterservi...
- etcdrestore.crd.yaml

OLM-Operator

olm-operator-serviceaccount

sourceType: Internal

CatalogSource2
Publisher: Red Hat

- etcd.package.yaml
- etcdbackup.crd.yaml
- etcdcluster.crd.yaml
- etcdoperator.clusterserviceversi...
- etcdoperator.v0.9.0.clusterservi...
- etcdoperator.v0.9.2.clusterservi...
- etcdrestore.crd.yaml

Catalog-Operator

olm-operator-serviceaccount

ConfigMap

Package-Server

olm-operator-serviceaccount

CRDs

Subscription

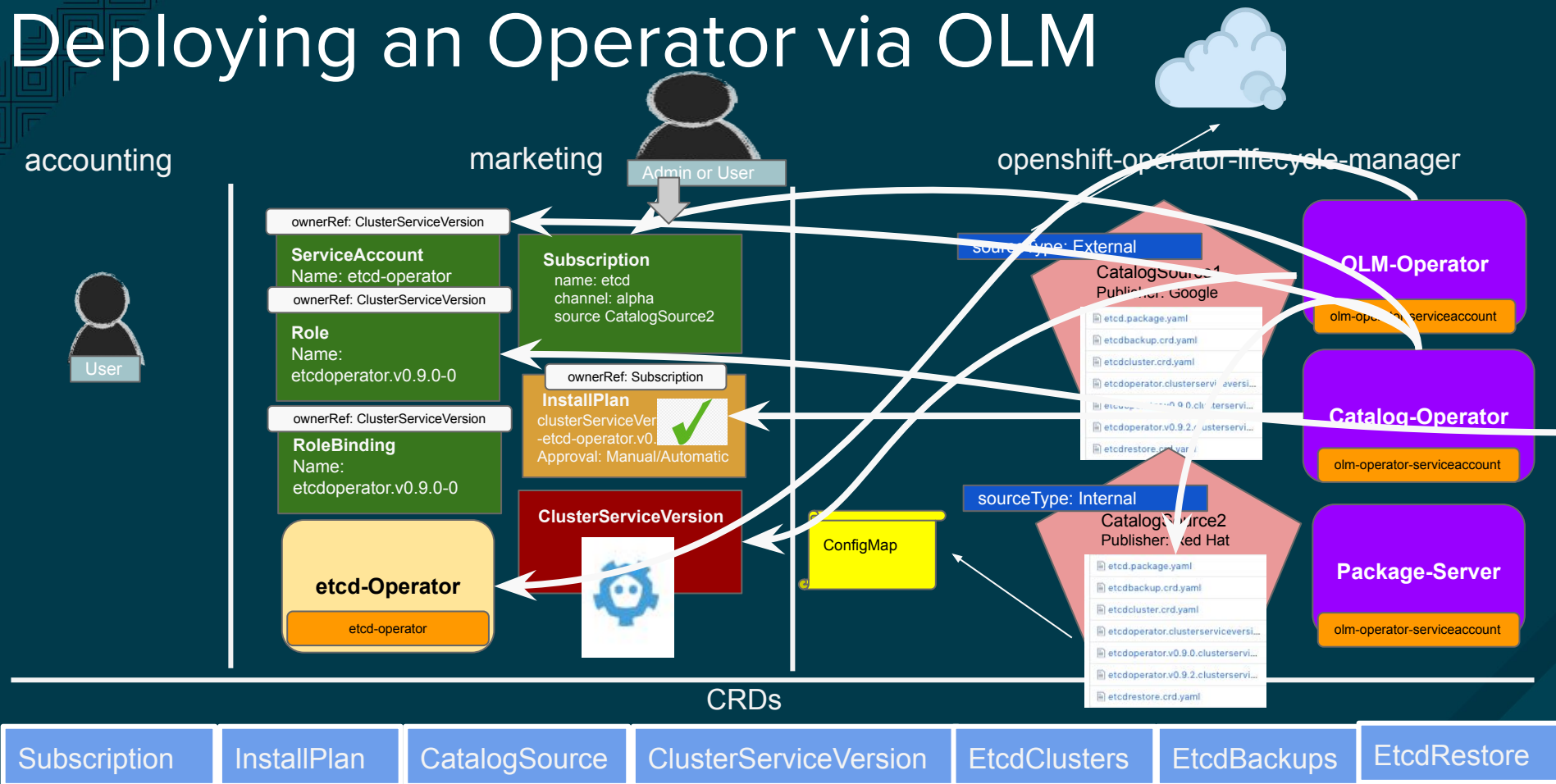
InstallPlan

CatalogSource

ClusterServiceVersion



Deploying an Operator via OLM

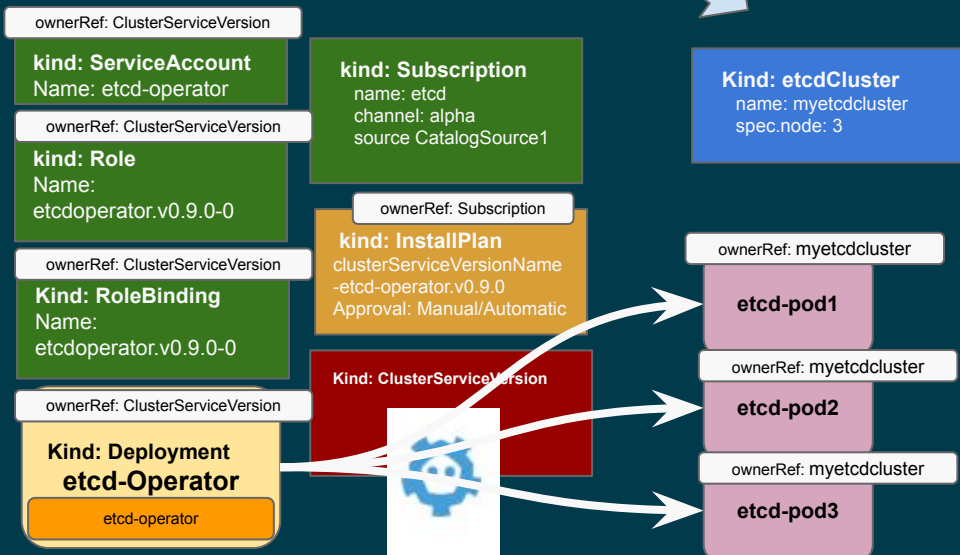


User Creates CR

marketing



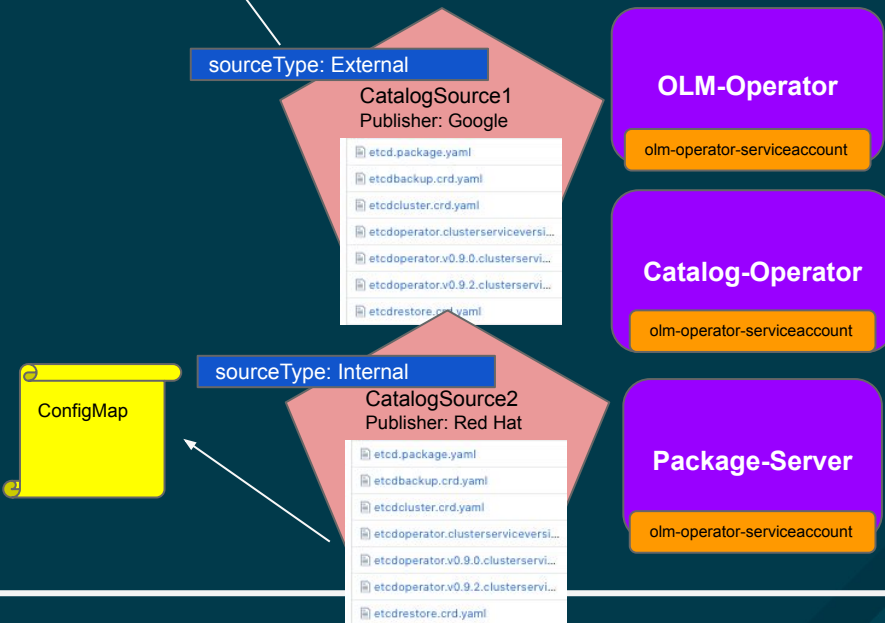
User



CRDs



openshift-operator-lifecycle-manager



Subscription

InstallPlan

CatalogSource

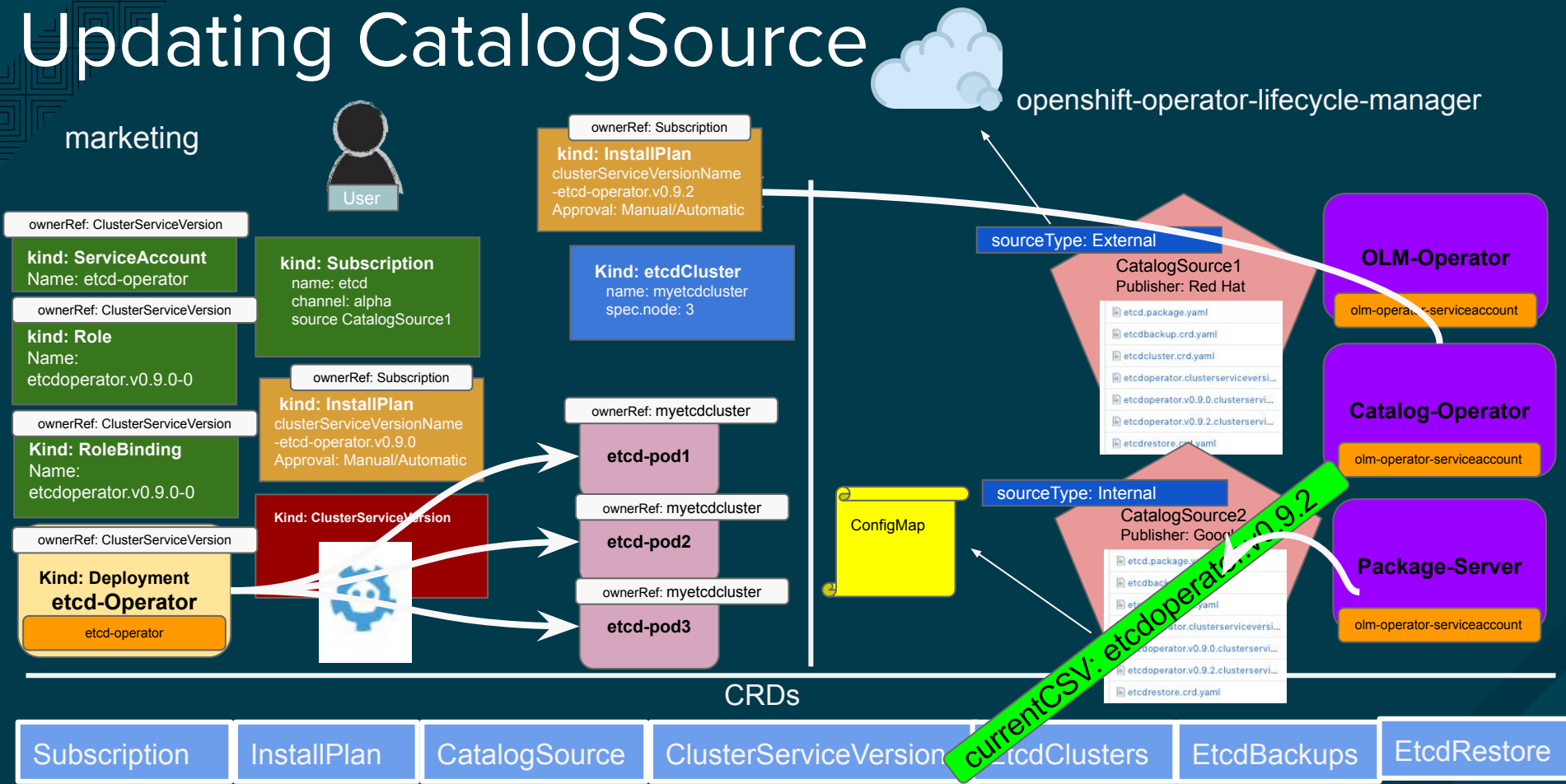
ClusterServiceVersion

EtcdClusters

EtcdBackups

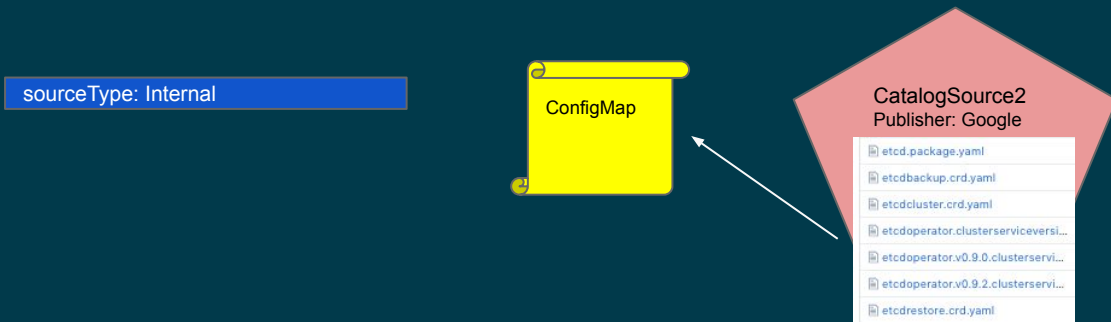
EtcdRestore

Updating CatalogSource



Issues with 0.7.x!

CONFIGMAP LIMITATION = 1MB (etcd)



Solution!

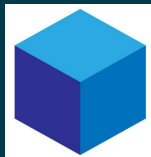
Registry-Pod per CatalogSource

sourceType: grpc

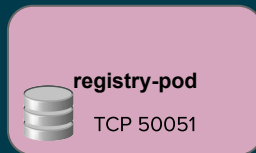
```
etcd.package.yaml
etcdbackup.crd.yaml
etcdcluster.crd.yaml
etcdoperator.clusterserviceversion.yaml
etcdoperator.v0.9.0.clusterserviceversion.yaml
etcdoperator.v0.9.2.clusterserviceversion.yaml
etcdrestore.crd.yaml
```



SQLite
(.db)



```
55 apiVersion: operators.coreos.com/v1alpha1
56 kind: CatalogSource
57 metadata:
58   name: sdeet-operators
59   namespace: olm
60 spec:
61   displayName: SDEET Eval Operators
62   image: quay.io/sdeet/sdeet-operators:latest
63   publisher: Red Hat Service Delivery
64   sourceType: grpc
```



We need the ability to influence the namespace or namespaces an Operator watches (and resides).

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Operator Lifecycle Manager

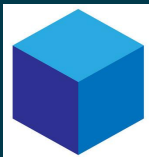
0.8.x

sourceType: grpc

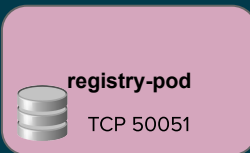
```
etcd.package.yaml
etcdbackup.crd.yaml
etcdcluster.crd.yaml
etcdoperator.clusterserviceversi...
etcdoperator.v0.9.0.clusterservi...
etcdoperator.v0.9.2.clusterservi...
etcdrestore.crd.yaml
```



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(.db)



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63   publisher: Red Hat Service Delivery
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```



ClusterServiceVersion is Analogous to a Package

ClusterServiceVersion

=

=

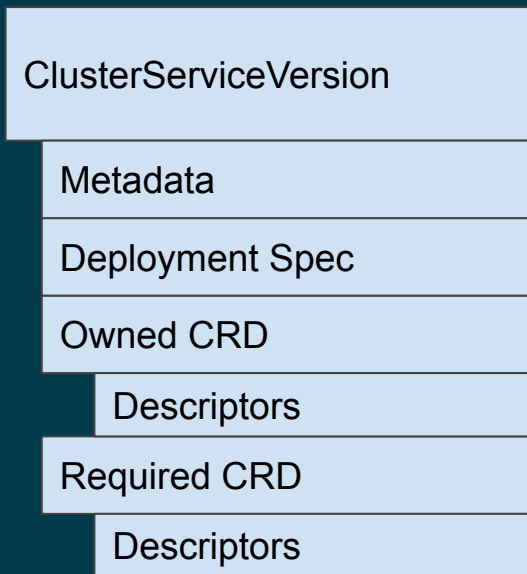
deb

rpm

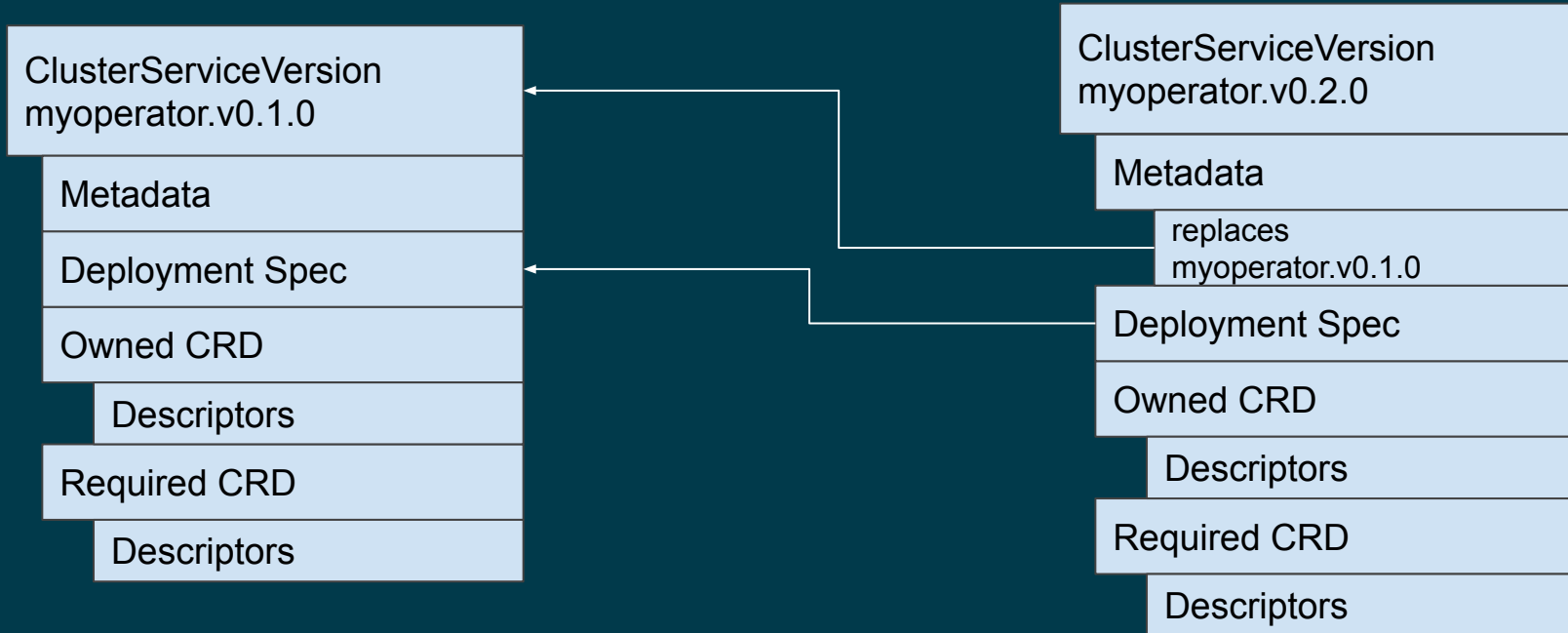
setup.py

formula

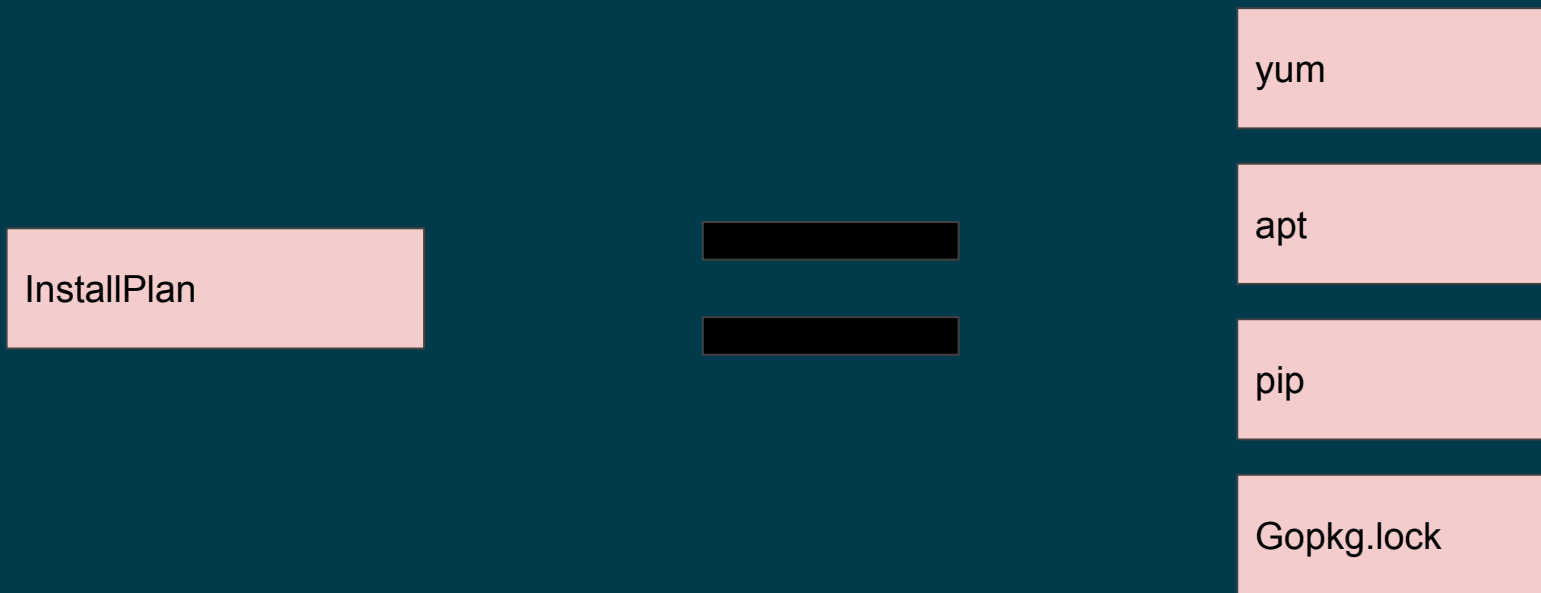
ClusterServiceVersion Manifest



Updating to a New CSV



InstallPlan is similar to a Package Manager



InstallPlan Manifest

InstallPlan

Desired CSVs

Status

Resolved CSVs

Resolved CRDs

InstallPlan Manifest

InstallPlan

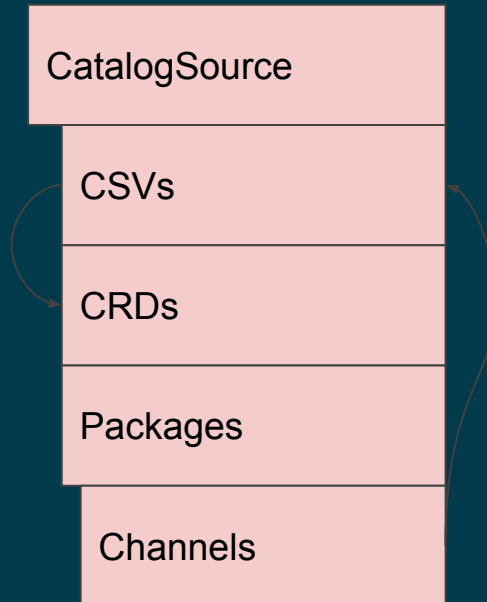
Desired CSVs

Status

Resolved CSVs

Resolved CRDs

Catalog Source Manifest



Subscription Manifest

Subscriptions

Package

CatalogSource

Dependency Management!

