

Versioning HelmReleases using Kustomize

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Overview

This document will cover the steps required to configure a cluster with a defined version.

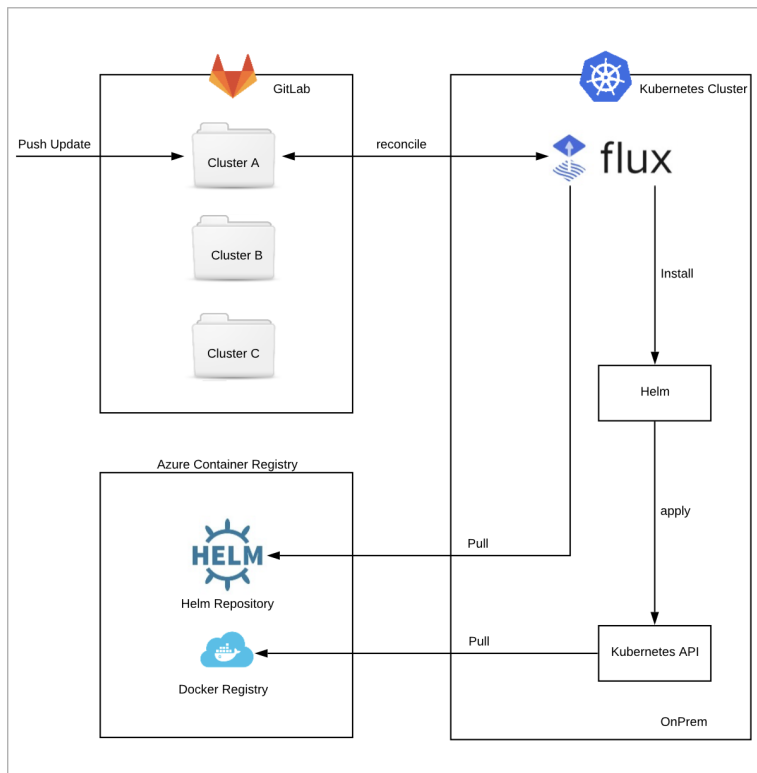
When configuring a cluster's deployment we will be defining the following:

- Version of helm charts and images
- Components to be installed.
- Custom configurations/overrides

Background

Our components are deployed using [Flux](#).

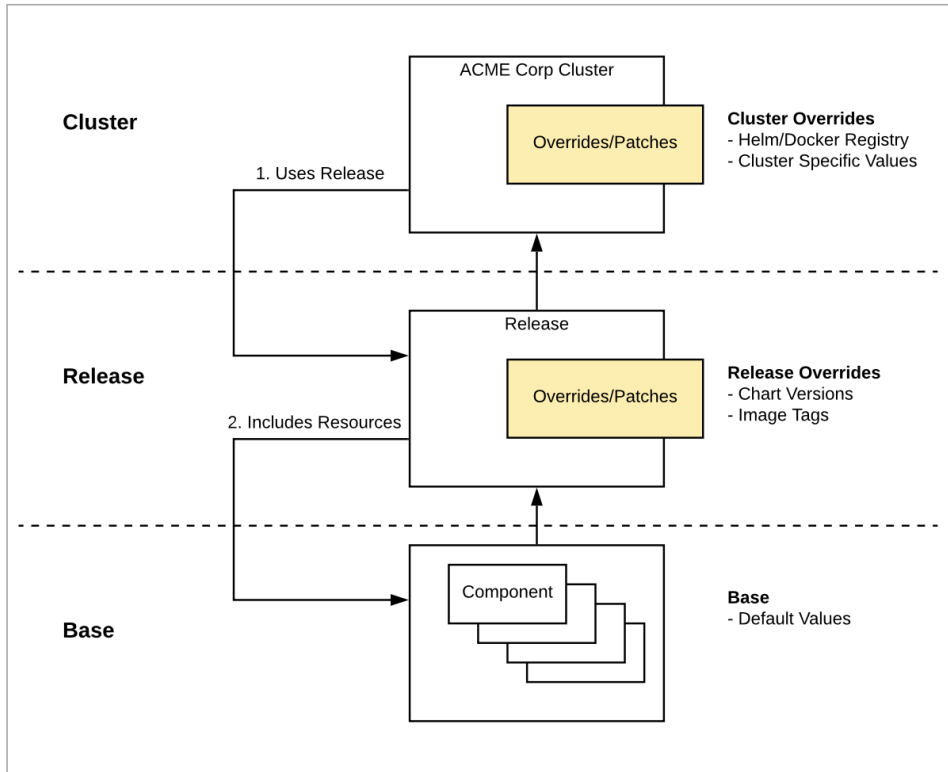
Flux is a tool that allows us to define the components to install on a cluster. After initial installation, Flux will poll the source(GitLab) and apply any changes.



In our configuration, we use GitLab as our source for defining multiple Helm Releases. A Helm Release defines the helm chart and configuration values to use for a particular component.

Releases

Using Kustomize, we can package our components into releases. This is done by applying overrides on top of the base layer.



Cluster Layer

The cluster layer defines what release to use and the overrides to apply for the specific cluster.

These overrides include such things as:

- Helm Chart and Container Registry
- Host Aliases
- Cluster specific values

clusters/acm/onprem/components/kustomization.yaml

```
apiVersion: kustomize.config.k8s.io/v1beta1
kind: Kustomization
# -----
# Resources
# core    - contains core components
# infra   - contains nginx-ingress controller used in develop and test environments
# extras  - contains extra components used in develop and test environments
# monitoring - contains components used for monitoring
# usecases - contains etls for the various use cases
#
# additional helmreleases can be included in the custom folder
# and referenced under resources.
# -----
resources:
- ../../../../releases/2023-02-03_22.0.1-2525403/onprem/core
- ../../../../releases/2023-02-03_22.0.1-2525403/onprem/infra
- ../../../../releases/2023-02-03_22.0.1-2525403/onprem/extras
# - ../../../../releases/2023-01-16_22.0.1-2473477/onprem/monitoring

# use cases
# - ../../../../usecases/onprem/helmrelease-etlflow-1301-ncom-data-enrichment.yaml

# custom
# - ./custom/helmrelease_sample.yaml

# -----
# PatchesStrategicMerge
# define overrides specific for a cluster
# -----
patchesStrategicMerge:

#core
- ./overrides/core/helmrepo-ncyd-helm-virtual.yaml
- ./overrides/core/ckaf-connect.yaml
- ./overrides/core/ckaf-connect-configurator.yaml
- ./overrides/core/ckaf-kafka.yaml
- ./overrides/core/fluent-bit.yaml
- ./overrides/core/kafka-azure-sink.yaml
- ./overrides/core/nginx-proxy.yaml
- ./overrides/core/topology-adapter.yaml

# extras
- ./overrides/extras/azuremockapi.yaml
- ./overrides/extras/ckaf-rest.yaml
- ./overrides/extras/ckaf-schema-registry.yaml
- ./overrides/extras/jira.yaml
- ./overrides/extras/kowl.yaml
- ./overrides/extras/mock-server.yaml
- ./overrides/extras/ssh-server.yaml

# infra
- ./overrides/infra/ingress-nginx.yaml

# monitoring
# - ./overrides/monitoring/file.yaml

#usecases
# - ./overrides/usecases/helmrelease-etlflow-1301-ncom-data-enrichment.yaml
```

Release Layer

A release specifies the base **resources** to use and applies a version/tag to the helm chart and images using an patch file defined under the **patchesStrategicMerge** section.

```
releases/2023-01-16_22.0.1.../onprem/core/kustomization.yaml
```

```
apiVersion: kustomize.config.k8s.io/v1beta1
kind: Kustomization
resources:
- ../../../../base/onprem/core/helmrepo-ncyd-helm-virtual.yaml
- ../../../../base/onprem/core/ckaf-kafka.yaml
- ../../../../base/onprem/core/ckaf-connect.yaml
- ../../../../base/onprem/core/ckaf-connect-configurator.yaml
- ../../../../base/onprem/core/fluent-bit.yaml
- ../../../../base/onprem/core/kafka-azure-sink.yaml
- ../../../../base/onprem/core/nginx-proxy.yaml
- ../../../../base/onprem/core/topology-adapter.yaml
patchesStrategicMerge:
- ckaf-kafka.yaml
- ckaf-connect.yaml
- ckaf-connect-configurator.yaml
- fluent-bit.yaml
- nginx-proxy.yaml
- topology-adapter.yaml
- kafka-azure-sink.yaml
```

Base Layer

The base layer defines all defaults for a component/resource.

Creating a Cluster from the Template

All clusters are defined under the **/clusters** folder in the GitLab repository. A template has been created that can be copied for use with other clusters.

Copy the **/clusters/TEMPLATE** folder to a new folder. Once this is done, we can make changes specific to the cluster which includes:

- Release Version
- Cluster Overrides

Updating the Components and Version

We can update the components and version by updating the following files:

- components/kustomization.yaml
- components/overrides/*.yaml

clusters/acm/onprem/components/kustomization.yaml

```
apiVersion: kustomize.config.k8s.io/v1beta1
kind: Kustomization
# -----
# Resources
# core - contains core components
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# extras - contains extra components used in develop and test environments
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#
# additional helmreleases can be included in the custom folder
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# -----
resources:
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- ../../../../releases/2023-02-03_22.0.1-2525403/onprem/infra
- ../../../../releases/2023-02-03_22.0.1-2525403/onprem/extras
# - ../../../../releases/2023-01-16_22.0.1-2473477/onprem/monitoring

# use cases
# - ../../../../usecases/onprem/helmrelease-etlflow-1301-ncom-data-enrichment.yaml

# custom
# - ./custom/helmrelease_sample.yaml

# -----
# PatchesStrategicMerge
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#core
- ./overrides/core/helmrepo-ncyd-helm-virtual.yaml
- ./overrides/core/ckaf-connect.yaml
- ./overrides/core/ckaf-connect-configurator.yaml
- ./overrides/core/ckaf-kafka.yaml
- ./overrides/core/fluent-bit.yaml
- ./overrides/core/kafka-azure-sink.yaml
- ./overrides/core/nginx-proxy.yaml
- ./overrides/core/topology-adapter.yaml

# extras
- ./overrides/extras/azuremockapi.yaml
- ./overrides/extras/ckaf-rest.yaml
- ./overrides/extras/ckaf-schema-registry.yaml
- ./overrides/extras/jira.yaml
- ./overrides/extras/kowl.yaml
- ./overrides/extras/mock-server.yaml
- ./overrides/extras/ssh-server.yaml

# infra
- ./overrides/infra/ingress-nginx.yaml

# monitoring
# - ./overrides/monitoring/file.yaml

#usecases
# - ./overrides/usecases/helmrelease-etlflow-1301-ncom-data-enrichment.yaml
```