Application Configuration Management in Kubernetes

There are four different approaches to handling application configuration management in Kubernetes.

1 Replicate and Customize'

2 Parameterized Templating

3 Overlay Configuration

4 Programmatic Configuration

Approaches to application configuration management in Kubernetes that are highlighted in this article, are supported by many different community tools

controlling the change to the desired state is just one aspect of the thorny issue of application configuration management in Kubernetes.

Replicate and Customize-

This is easiest approach it simply involves the replication of an existing,valid defination,The defination can then be customized to suit the purpose at hand

This approach is hard for those that have gone before and involves little work to bring about fitness for purpose

Parameterized Templating-

Resource definitions are provided for applications, but they are templated to account for customization requirements

Parameters inserted into a template can either make use of sane default values or apply a user-provided alternative.

The level of flexibility afforded is directly related to how much of the template is parameterized.

Example

Helm package manager

Overlay Configuration-

Base configuration is provided which reflects the generic configuration for an application

The base configuration can be 'overlayed' with snippets of customized configuration to nuance the definition for a specific purpose. The base is effectively merged with the overlay

Kustomize is one such overlay configuration tool and is built into the native Kubernetes CLI, kubectl.

Programmatic Configuration-

Either use a purpose-built Domain Specific Language (DSL) or a more generic programming language.

This enables the creation of a default definition for an application's configuration, but also provides for replacing default configuration items with specific values to suit the purpose

Examples of this approach include jk, Dhall, Cue, Tanka, and Pulumi.