# Kubernetes from Basic to Advanced

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# Session #09
# Helm

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# Session Contents

- What is Helm?
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# What is Helm?

# Motivation

- To deploy your applications, you need to create several manifest files
- When you want to deploy on different target clusters/environments you may need to make minor changes to reflect those differences
- Additionally, you may want to publish your manifest files on a centralized registry to make it available for other people/teams to reuse them
- To achieve this, a package manager-like tool is what you need
- Helm is the Kubernetes Package Manager

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# Helm Architecture

- Helm is a tool for managing Kubernetes packages called charts
- Helm can do the following:
  - Create new charts from scratch
  - Package charts into chart archive (tgz) files
  - Interact with chart repositories where charts are stored
  - Install and uninstall charts into an existing Kubernetes cluster
  - Manage the release cycle of charts that have been installed with Helm

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# Helm Concepts

- The chart is a bundle of information necessary to create an instance of a Kubernetes application
- The config contains configuration information that can be merged into a packaged chart to create a releasable object.
- A release is a running instance of a chart, combined with a specific config
- Optionally, you may use a registry where you place/publish your charts to be used by other

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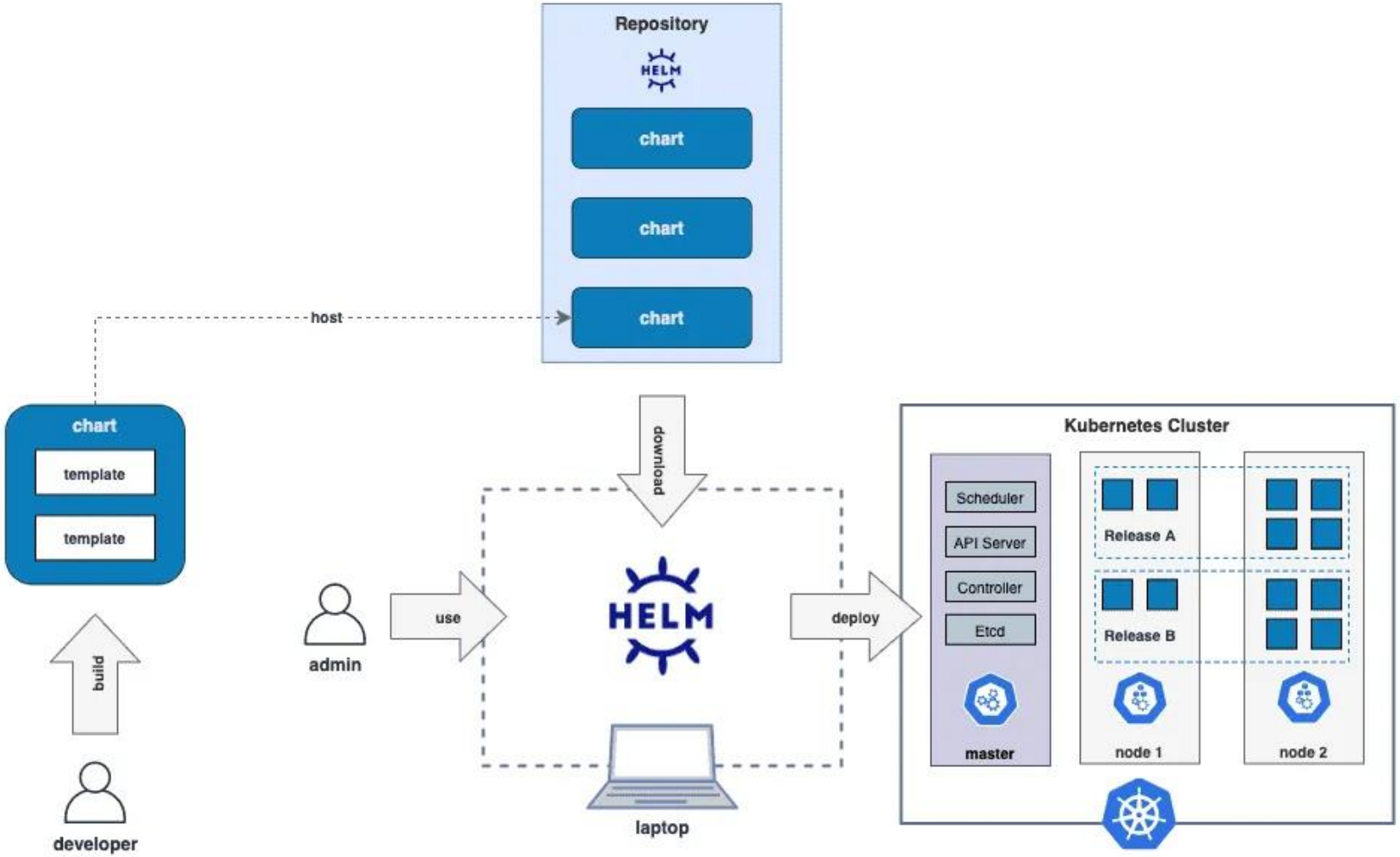
# Helm Concepts

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# Helm Benefits

- Deployment speed: you can deploy any application available at the Helm chart repository within a single command.
- Prebuilt application configurations: Helm allows you to install community-supported applications with ease.
- Easy rollbacks: Helm allows you to easily roll back your application deployment to the previous version if something goes wrong.

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# Helm OCI Registries

- OCI (Open Container Initiative) have a registry specification for container images registries
- Helm (on version 3) can use container registries with OCI support to store helm charts
- Several container registries have OCI Support
  - Docker Hub
  - GitHub Packages
  - All cloud providers Container Registries
- Central place to find Helm Charts is ArtifactHUB

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# Demo | Use Helm

# Helm Charts

# Motivation

- Until now we've used Helm to deploy chart that someone produced, like using Docker Hub to pull images
- Then I want to create my own charts, from my own applications, to make deploys
- After having those charts working, I may (or not) publish them to a registry

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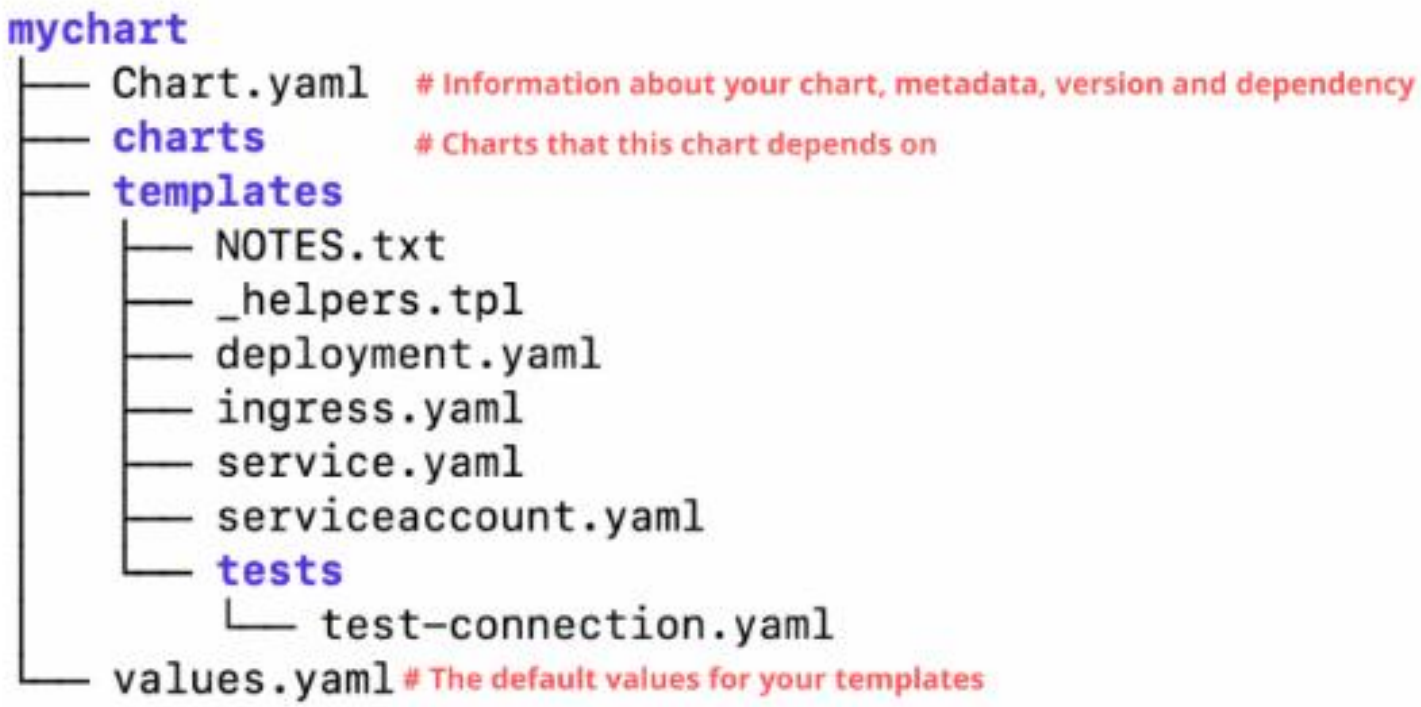
# Helm Chart Structure

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# Helm: Chart File

- Main file that makes a folder be a Helm Chart folder
- You can see it like chart metadata
- Includes
  - Name
  - Description
  - Chart version
  - App version (different from chart version)

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# Helm: values File

- This file allows you to define values (variables) that can be set when someone uses your chart
- Can be more restrictive or more open
- All variables defined where can be used on your templates

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# Helm: templates Folder

- Where you define all Kubernetes objects that your application will need
- Are created using a Helm templating language that can use variables to implement dynamic behavior
- Can use functions to add extra features like conditionals and cycles
- Can have as much templates as needed to create all Kubernetes resources

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# Demo | Helm Charts

# Questions?

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