

kubectl config view --minify | grep namespace:Prerequisite:

Knows GO. Do you understand <https://play.golang.org/p/iWLcHgSnoRs> ?

Phase 0: Install kind and kubectl

- Install kind
 - <https://kind.sigs.k8s.io/docs/user/quick-start/>

```
curl -Lo ./kind https://kind.sigs.k8s.io/dl/v0.16.0/kind-linux-amd64
chmod +x ./kind
sudo mv ./kind /usr/local/bin/kind

kind create cluster
kind delete cluster
```

- Install kubectl

```
curl -LO "https://dl.k8s.io/release/${curl -L -s
https://dl.k8s.io/release/stable.txt}/bin/linux/amd64/kubectl"
chmod +x ./kubectl
sudo mv ./kubectl /usr/local/bin/kubectl
```

```
kubectl get nodes
```

- kubectl fish auto complete
 - kubectl completion -h
 - <https://github.com/evanlucas/fish-kubectl-completions>

Kubectl plugins

Install krew

<https://krew.sigs.k8s.io/docs/user-guide/quickstart/>

```
kubectl krew install ns
```

```
kubectl krew install view-secret
```

```
kubectl krew install ctx
```

Phase 1: Learn Kubernetes as a user (2 weeks)

Videos, Kubernetes

[Book: Kubernetes Up & Running](#) (3rd ed) (Ch 1-6, 9-14) (skip ch 7-8 from this book and read the networking book)

[Networking and Kubernetes](#) (Ch 1-5)

- <https://iximiuz.com/en/posts/container-networking-is-simple/>

Workload, Networking, Storage, Configmap/Secret, RBAC(authentication / authorization)

- Read Tutorials
 - <https://kubernetes.io/docs/tutorials/kubernetes-basics/>
 - <https://kubernetes.io/docs/tutorials/stateless-application/hello-minikube/>
- Read concepts
 - <https://kubernetes.io/docs/concepts/>
 - <https://www.youtube.com/watch?v=jgmdY73RF6w&list=PLMPZQTftRCS8Pp4wiiUruly5ODScvAwcQ>
- Deploy Book server in minikube using kubectl and YAML files

Video: [Sysdevbd batch-1 2018-11-13.31 Mi1 \(W9\): Kubernetes](#)

Phase 2: Do kubectl-y things using k8s.io/client-go (2 days)

Video: <https://youtu.be/peK6LQZ6ePo>

<https://kubernetes.io/docs/reference/using-api/api-overview/>

<https://kubernetes.io/docs/reference/using-api/api-concepts/>

Video: [Authentication Options for HTTP api & Kubernetes](#)

- client-go: Learn about client-go and deploy book server using Go code
 - <https://github.com/kubernetes/client-go>
 - <https://medium.com/programming-kubernetes/building-stuff-with-the-kubernetes-api-part-4-using-go-b1d0e3c1c899>
 - <https://github.com/kubernetes/client-go#how-to-use-it>
 - <https://kubernetes.io/docs/tasks/run-application/update-api-object-kubectl-patch/>
 - Example
 - <https://github.com/kubernetes/client-go/tree/master/examples>
 - Configuration
 - [Authenticate in cluster](#): Configure a client while running inside the Kubernetes cluster.
 - [Authenticate out of cluster](#): Configure a client to access a Kubernetes cluster from outside.
- Basics
- [Managing resources with API](#): Create, get, update, delete a Deployment resource. Dynamic Client Example
 - <https://github.com/tamalsaha/who-is-pod-controller/tree/master>
-

Phase 3: Helm (3 days)

Go template : [GO Template Example](#)

<https://youtu.be/i7QDS7yGEG4>
<https://www.youtube.com/watch?v=-ykwb1d0DXU>

- <https://helm.sh/docs/intro/quickstart/>
- <https://helm.sh/docs/topics/charts/>
- https://helm.sh/docs/chart_template_guide/getting_started/
- https://helm.sh/docs/howto/charts_tips_and_tricks/
- https://helm.sh/docs/topics/charts_hooks/
-
- Go Template:
 - <https://golang.org/pkg/text/template/>
 - <https://levelup.gitconnected.com/learn-and-use-templates-in-go-aa6146b01a38>
- Template Functions: <https://github.com/Masterminds/sprig/blob/master/docs/index.md>
- Function List: https://helm.sh/docs/chart_template_guide/function_list/

Recommended Label:

<https://kubernetes.io/docs/concepts/overview/working-with-objects/common-labels/>

Phase 4: Learn Make (2-3 days)

- <https://makefiletutorial.com/>
 - <https://opensource.com/article/18/8/what-how-makefile>
 - [Makefiles for Go Developers](#)
 - Do you understand the Makefile in this project?
<https://github.com/thockin/go-build-template> . All our makefiles are based on this project.
 - Book:
 - https://www.gnu.org/software/make/manual/html_node/index.html
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Phase 5: Concepts of CRD and Controller

Doc:

<https://kubernetes.io/docs/concepts/api-extension/custom-resources/>
[Extend the Kubernetes API with CustomResourceDefinitions](#)
[Get an overall good Idea on API Access Control](#) specially :

- Authentication
- RBAC
- Finalizer
- Admission Controller
- Webhook

Videos:

Dec 12, 2018 : [Learning Kubernetes CRDs](#)

May 13 , 2020 : [Learning Kubernetes CRD in 2020](#)

5A - Make Custom Controller :

Code Generation blog

[Kubernetes Deep Dive: Code Generation for CustomResources](#)
[kubernetes code generator tags](#)

Videos:

Feb 1, 2018 : [How to write a Kubernetes Controller](#)

Apr 2, 2018 : [Using Kubernetes CRD validation](#)

Nov 27, 2019 : [How status.observedGeneration field works in CRDs](#)

Jan 21, 2020 : [Designing CRD Types](#)

Community support ::

[API convention](#)

[Garbage Collection](#)

[Writing Controllers](#)

Code Example:

- Workqueue example:
 - <https://github.com/kubernetes/client-go/tree/master/examples/workqueue>
- [Sample-controller](#)
<https://github.com/kubernetes/sample-controller>
- Code-Generator
<https://github.com/kubernetes/code-generator>

5B- KubeBuilder:

[Kubebuilder Quick Start](#)

<https://book.kubebuilder.io/cronjob-tutorial/cronjob-tutorial.html>

Videos:

July 28, 2021 : [KubeBuilder Deep dive.](#)

Aug 26, 2021 : [Using KubeBuilder.](#)

Oct 20, 2021: [sample-controller using Kubebuilder.](#)

Phase 6: Extended API server :

<https://github.com/tamalsaha/DIY-k8s-extended-apiserver>

Video: [DIY Kubernetes Extended API Server.](#)

Medium Series

- [Programming a Kubernetes Extension API Server – Part 1](#)
- [Programming a Kubernetes Extension API Server— Part 2](#)
- [Programming a Kubernetes Extension API Server – Part 3](#)

Mar 2, 2018 : [Handling Multiple Versions in Kubernetes Admission Webhook \(Audio in Bangla\)](#)

Mar 9, 2018 : [Writing Extended API Server for Kubernetes](#)

- <https://github.com/kubernetes-incubator/apiserver-builder/tree/master/docs/concepts>
 - <https://kubernetes.io/docs/concepts/extend-kubernetes/api-extension/apiserver-aggregation/>
 - <https://github.com/appscode/stash/issues/353#issuecomment-372040217>
 - **Sample-apiserver**
 - <https://github.com/kubernetes/sample-apiserver>
 - <https://github.com/openshift/kubernetes-namespace-reservation>
 - <https://github.com/openshift/generic-admission-server>
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Phase 7: Others

TLS

- [How to MTLS in golang](#)
- [Illustrated X.509 Certificate. Introduction | by Takahiko Kawasaki | Medium](#)

Learn Prometheus

<https://www.youtube.com/watch?v=ZtYMuxAj7EU>

Operating Kubernetes

- [10 most common mistakes using kubernetes – pipetail Blog](#)

Tasks

- <https://kubernetes.io/docs/tasks/>
<https://github.com/appscode/voyager/issues/329>

Daniel Smith

[Kubernetes-style APIs of the Future - Daniel Smith, Google \(Any Skill Level\)](#)

[A Vision For API Machinery: Coming to Terms with the Platform We Built - Daniel Smith, Google](#)

[Deep Dive: API Machinery SIG - Stefan Schimanski, Red Hat & Daniel Smith, Google](#)

Extended API Server

- [Writing Extended API Server for Kubernetes](#)
- [DIY Kubernetes Extended API Server](#)

<https://github.com/kubernetes/community/blob/master/contributors/design-proposals/api-machinery/aggregated-api-servers.md>

apiserver-builder

<https://github.com/kubernetes-incubator/apiserver-builder>

<https://github.com/kubernetes/sample-apiserver>

<https://github.com/openshift/generic-admission-server>

<https://github.com/openshift/kubernetes-namespace-reservation>

https://docs.google.com/document/d/11xnIAftNvRirZ_BXrO7lgFwfBMVK3lxgrcE5DepeqzA/edit

Video: <https://www.youtube.com/watch?v=3FUNIQMY9Ug>

Q/A: <https://github.com/appscode/stash/issues/353#issuecomment-372040217>