

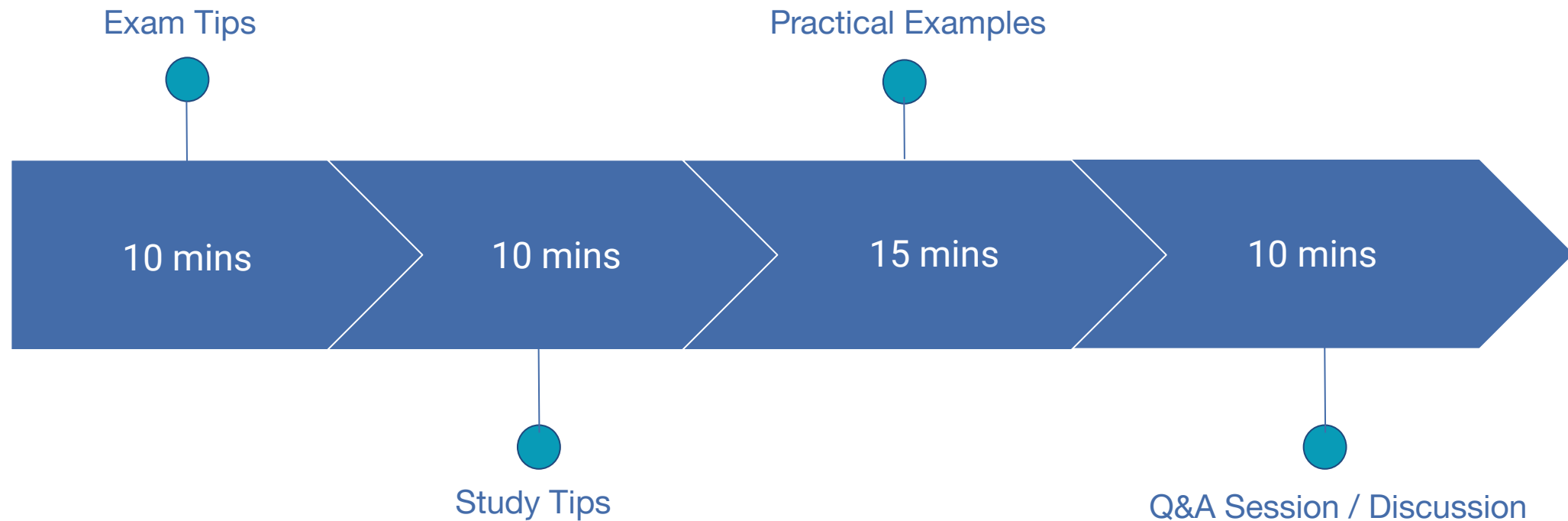
**CLOUD NATIVE
COMPUTING
FOUNDATION**



CKAD Study & Exam Tips

<https://community.cncf.io/manly>

Agenda



Special thanks



SIG Docs

<https://kubernetes.io/docs/contribute/participate>



slack.cncf.io



slack.k8s.io

Exam Tips - Why sit the exam

As one of the highest velocity projects in the history of open source, Kubernetes use is exploding. The Cloud Native Computing Foundation is committed to growing the community of Kubernetes-knowledgeable application developers, thereby enabling continued growth across the broad set of organizations using the technology.

Certification is a key step in that process, allowing certified application developers to quickly establish their credibility and value in the job market, and also allowing companies to more quickly hire high-quality teams to support their growth.

Exam Tips - Exam Curriculum

- 13% – Core Concepts
- 18% – Configuration
- 10% – Multi-Container Pods
- 18% – Observability
- 20% – Pod Design
- 13% – Services & Networking
- 8% – State Persistence

CKAD Certificate



Exam Tips



Exam Tips - Booking your exam

To book goto: <https://www.cncf.io/certification/ckad>

- Book exam straight away to set your goal
- Free reschedule as many times as you want 24 hours in advance
- Price is in US dollars
- One free retake



\$300

Exam only

Enroll Today

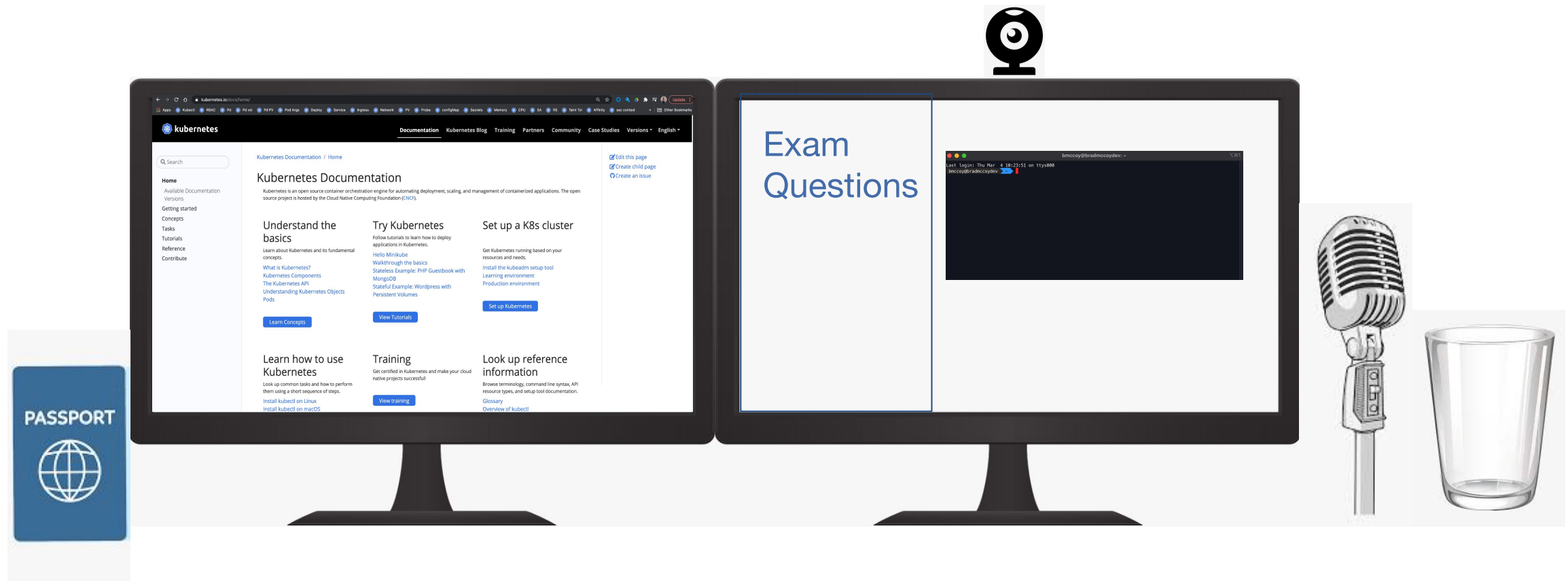
[Get a Quote](#)

Exam Tips - Discount Codes

<https://events.linuxfoundation.org/kubecon-cloudnativecon-europe/register>

	All Access	Keynote + Showcase Only
All Keynote Sessions	×	×
All Breakout Sessions	×	
All Tutorials + 101 Track	×	
Live Q+A with Speakers	×	
Solutions Showcase	×	×
Sponsor Theater	×	×
Engage with Project Maintainers + Leads	×	
Networking such as Chat + Job Board	×	
Experiences including Yoga, Meditation, Games	×	
Ability to Register for Co-Located Events	×	
50% off CKA, CKAD, CKS, CKA Bundle, CKAD Bundle OR CKS Bundle (select one)	×	
\$75 off any LF Training Product (Training + Certification)		×

Exam Day



Exam Tips

- You can start the exam 15 minutes before the scheduled time, this is the amount of time it will take to talk to the proctor.
- Make sure that your room is clean on exam day, they will ask you to walk around the room with your camera
- Nothing to be on the walls
- Drinks need to be in a clear glass, toilet breaks allowed.
- Don't talk during the exam
- Take note of how to copy and paste

Exam Tips

- There is a notepad you can use in the portal
- The exam consists of 15-20 performance based tasks
- Each question has a weight eg 5% skip hard ones and flag them for later
- Straight away use **sudo -i** to assume elevated privileges to make things easier. If you want to get out type exit or **su student**
- Use “**ssh <Node Name>**” to get into the node, remember which node you are in so you don't get confused
- Always copy pod names etc instead of typing out to avoid spelling mistakes
- Use imperative commands over YAML

Exam Tips - Naming YAML files

When generating YAML files, name them with the question number

Example

1.yaml

1-svc.yaml

```
kubectl run example bradmccoydev/test:latest -o yaml > 1.yaml
```

```
cp 1.yaml 1a.yaml (backup if required)
```

```
kubectl create -f 1.yaml
```

Exam Tips - alias k=kubectl

alias k=kubectl

Use this so you don't have to keep typing kubectl all the time

Eg.

alias k=kubectl

k run nginx --image=nginx

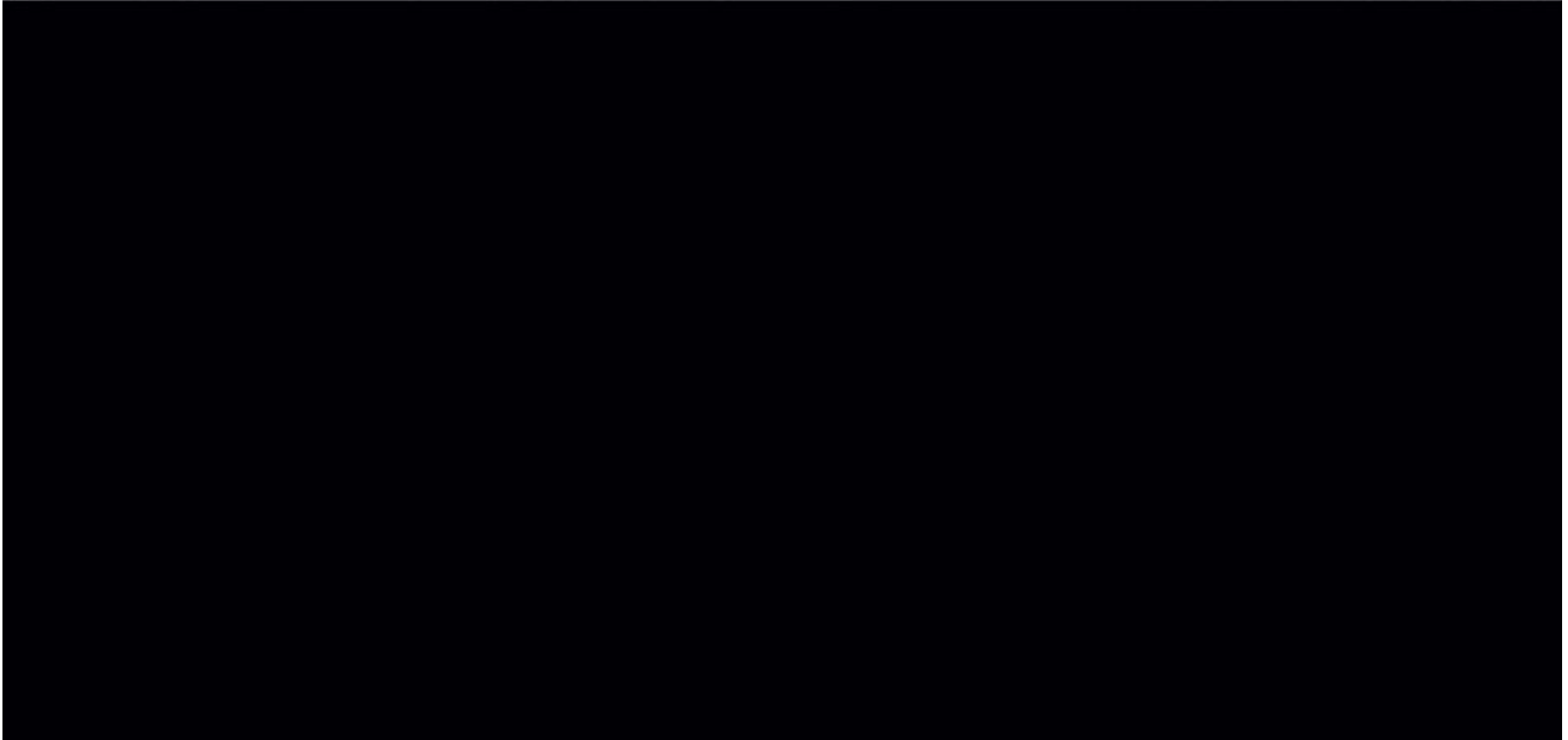
Exam Tips

Make sure you are in the right cluster, and the right namespace as specified in the question, to avoid deploying to the wrong namespace when using YAML to create resources specify it in the metadata in case you forget.



Exam Tips - kubectl api-resources

kubectl api-resources to get names/short names eg. *kubectl get svc*



Exam Tips - Reverse Search (Ctrl + r)



Exam Tips - Watch command

Make use of the **watch** command when checking if deployments worked etc it will execute the command every 2 seconds until you **ctrl + c** eg *watch kubectl get pods*



Exam Tips - kubectl -h command

Use the **-h** for help! **kubectl run -h** gives some hints if you forgot imperative commands under pressure.

Practice the **-h** command on other options such as **kubectl create deploy -h** etc



Study Tips



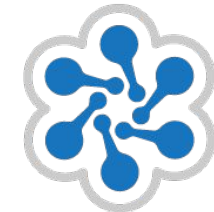
Study Tips - Courses



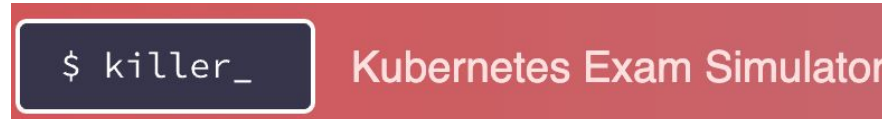
[walidshaari/Kubernetes-Certified-Administrator.git](https://github.com/walidshaari/Kubernetes-Certified-Administrator.git)



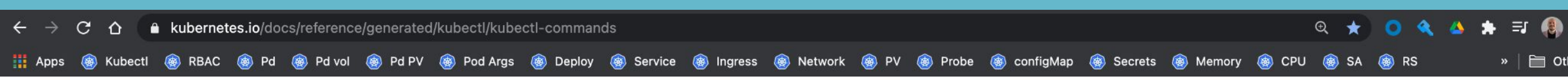
PLURALSIGHT



CloudAcademy



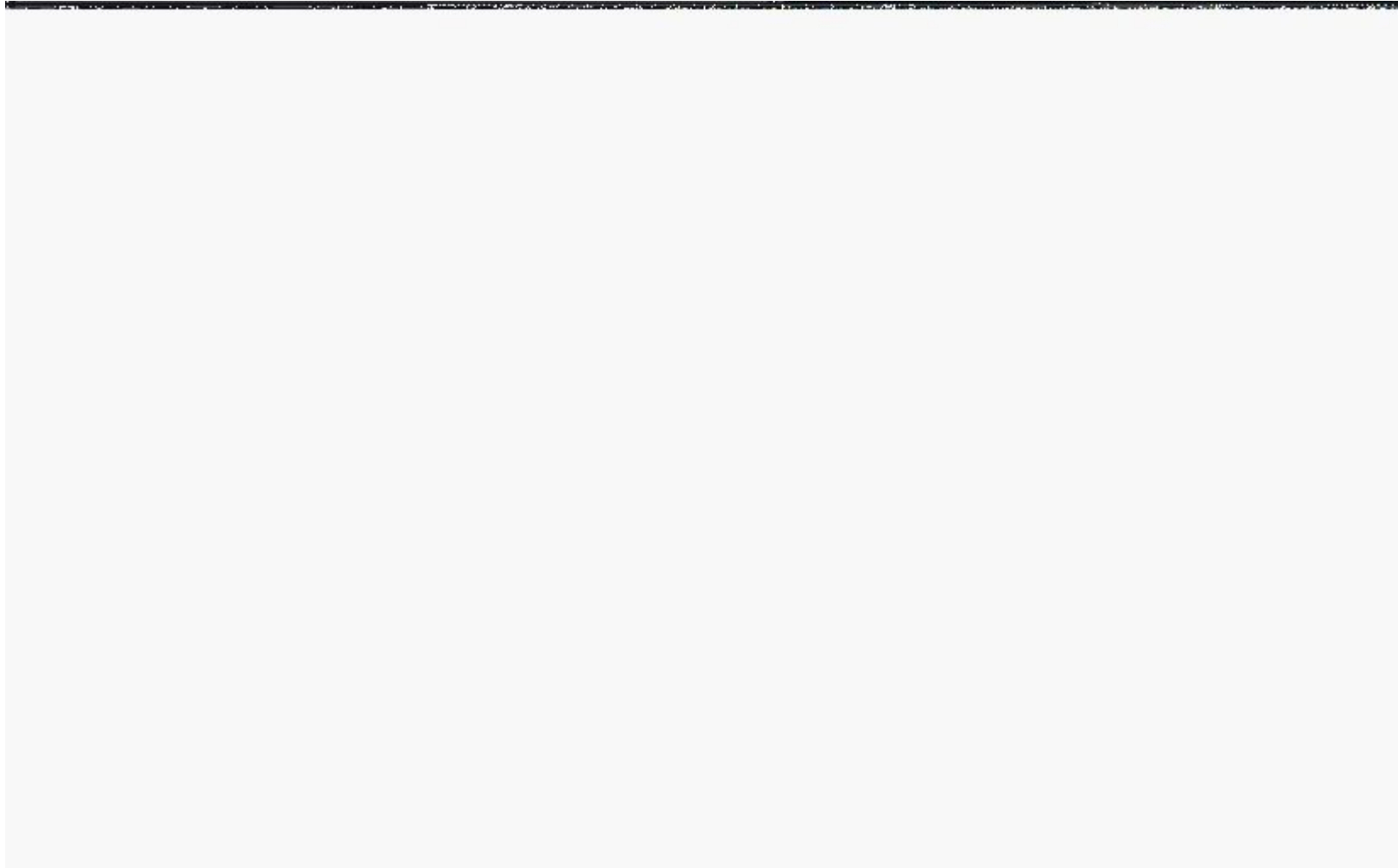
Study Tips - Use bookmarks!



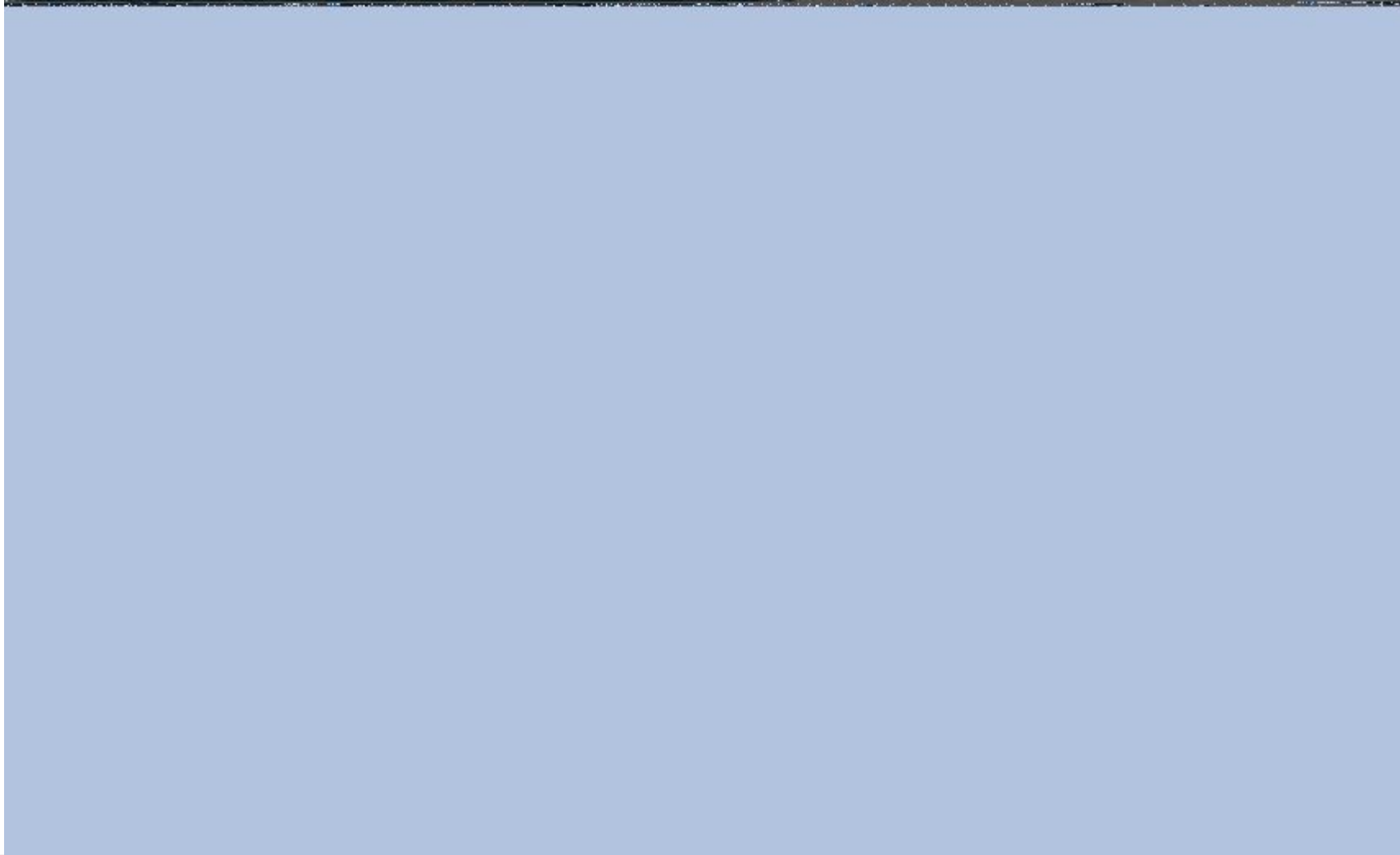
In the exam you are allowed to use bookmarks for the documentation so as you study and learn add bookmarks to the page in kubernetes docs.

When you do your practice tests and practical work, refer to the bookmarks and not your notes, this will help you be fast for exam day.

Study Tips - Use bookmarks!



Study Tips - kubectl Reference Docs



Study Tips - VIM

If you don't know VIM editor learn it. You can get away with just knowing nano, by setting `KUBE_EDITOR="nano"` but when you need to edit deployments etc it will default to VIM so you don't want to risk being stuck. If you don't know VIM you are not ready for your exam.

VIM Cheat Sheet: vim.rtorr.com

Study Tips - VIM

There are two modes, for writing/deleting text press i, then press esc for edit mode

To exit without saving press esc and type :q!

To exit with saving press esc and type :wq!

To delete a line type dd

To delete more than one line type 5dd (substitute 5 for the number you want to delete)

To Goto line 5 type 5gg (substitute 5 for the number you want to goto)

To Jump to the end of the line type \$

To search for a word eg image press esc then type /image and press enter

To show line numbers press esc and then type :set number

Study Tips - Basic linux commands

If you are a developer doing this course and you are not used to linux, it is worth learning basic linux commands.

Command	Description	Example
cd	Used to go into or out of a folder	cd myfolder (cd .. to go back)
ls	List files/folders in a directory	ls (ls myfolder to list contents of myfolder)
grep	Searches for text	cat 1.yaml grep image
cat	Read a file on the console	cat deployment.yaml
cp	Copy a file	cp 1.yaml 1a.yaml
mv	Move a file	mv 1.yaml backup/1.yaml
mkdir	Make a directory	mkdir test
rm	Removes a file or folder	rm 1.yaml (rm -R myfolder for directory)
vi	Go into vi editor	vi deployment.yaml

Practical Examples



Practical Examples

- 13% – Core Concepts
- 18% – Configuration
- 10% – Multi-Container Pods
- 18% – Observability
- 20% – Pod Design
- 13% – Services & Networking
- 8% – State Persistence

Practical Examples - General

Command	Description
<code>kubectl get pods --show-labels</code>	Show labels for pods
<code>Kubectl get pods -l app=postgres</code>	List pods that have the label app=postgres
<code>kubectl get pods -A</code>	Show pods in all namespaces
<code>kubectl get all -n dev</code>	Show all (most) things in the namespace dev
<code>kubectl api-resources</code>	Get names/short names for resources
<code>kubectl run -h</code>	Get help for kubectl
<code>alias k=kubectl</code>	Sets k as the alias for kubectl

Practical Examples - Core Concepts

```
kubectl run -h
```

```
kubectl run nginx --image nginx --dry-run=client -o yaml > 1.yaml
```

```
kubectl run hazelcast --image=hazelcast/hazelcast --port=5701
```

```
kubectl run hazelcast --image=hazelcast/hazelcast --env="app=hazelcast,env=prod"
```

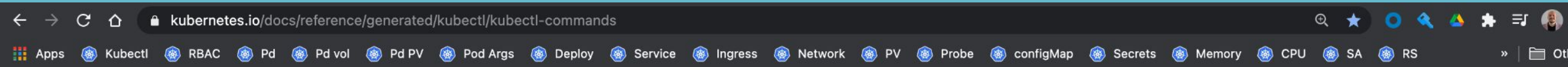
```
kubectl run hazelcast --image=hazelcast/hazelcast --labels="app=hazelcast,env=prod"
```

```
kubectl run hazelcast --image=hazelcast/hazelcast --command 'sleep 3600'
```

```
kubectl run hazelcast --image=hazelcast/hazelcast --requests='cpu=100m,memory=256Mi'
```

```
kubectl run hazelcast --image=hazelcast/hazelcast --limits='cpu=200m,memory=512Mi'
```

Practical Examples - Configuration



Config Maps (cm for short)

```
kubectl create configmap myconfig --from-literal=username=brad
```

```
kubectl get configmap myconfig -o yaml
```

```
kubectl run test-pod --image busybox --dry-run=client -o yaml > 1.yaml
```

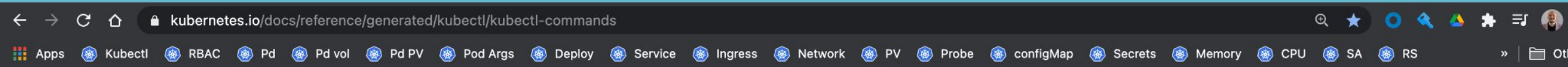
```
kubectl create -f 1.yaml
```

<https://kubernetes.io/docs/reference/generated/kubectl/kubectl-commands#-em-configmap-em->

<https://kubernetes.io/docs/tasks/configure-pod-container/configure-pod-configmap>

```
apiVersion: v1
kind: Pod
metadata:
  name: test-pod
spec:
  containers:
    - name: test-container
      image: busybox
      env:
        # Define the
        environment variable
        - name: USERNAME
          valueFrom:
            configMapKeyRef:
              # The ConfigMap
              containing the value you want
              to assign to USERNAME
              name: myconfig
              # Specify the
              key associated with the value
              key: username
```


Practical Examples - Configuration



Secrets

`kubectl create secret generic mysecret --from-literal=password=123`

`kubectl get secret mysecret -o yaml`

`kubectl run test-pod --image busybox --dry-run=client -o yaml > 1.yaml`

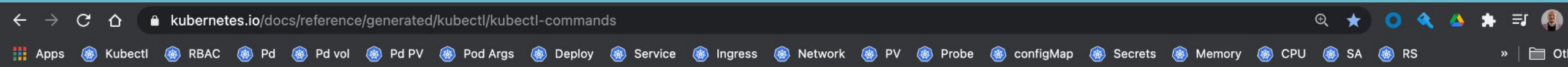
`kubectl create -f 1.yaml`

<https://kubernetes.io/docs/reference/generated/kubectl/kubectl-commands#-em-secret-generic-em->

<https://kubernetes.io/docs/concepts/configuration/secret/>

```
apiVersion: v1
kind: Pod
metadata:
  name: test-pod
spec:
  containers:
  - name: test-container
    image: busybox
    env:
      # Define the
      environment variable
      - name: PASSWORD
        valueFrom:
          secretKeyRef:
            name: mysecret
            key: password
```

Practical Examples - Configuration



Service account

```
kubectl create serviceaccount my-service-account
```

```
kubectl get serviceaccount my-service-account
```

```
kubectl run test-pod --image busybox --serviceaccount='my-service-account'
```

<https://kubernetes.io/docs/reference/generated/kubectl/kubectl-commands#-em-serviceaccount-em->

<https://kubernetes.io/docs/tasks/configure-pod-container/configure-service-account/>

<https://community.cncf.io/manly>

Practical Examples - Observability

Get logs from pod
kubectl logs my-pod

Get logs from pods with the name label myLabel
kubectl logs -l name=myLabel

Output logs to console
kubectl exec my-pod -c my-container -- cat /var/log.txt (multi container)

Go into the pod to look for the logs
kubectl -n your-namespace exec -it pod/your-pod -- /bin/sh

Kubectl cheatsheet
<https://kubernetes.io/docs/reference/kubectl/cheatsheet>

Practical Examples - Observability

kubectl top node

```
bmccoy@bradmccoydev: ~  
Last login: Thu Mar  4 10:23:51 on ttys000  
bmccoy@bradmccoydev ~$ kubectl top node
```

NAME	CPU(cores)	CPU%	MEMORY(bytes)	MEMORY%
k8s-vm-tma-00106cl-m0	311m	7%	1197Mi	31%
k8s-vm-tma-00106cl-vm-tma-00106	180m	2%	1158Mi	7%

kubectl top pod

```
bmccoy@bradmccoydev ~$ kubectl top pod -n overwatch-api
```

NAME	CPU(cores)	MEMORY(bytes)
overwatch-api-cd8868467-2rg6f	1m	110Mi
overwatch-api-cd8868467-g5bzv	1m	106Mi
overwatch-api-main-mongodb-6c4d6c8b8f-cgf67	26m	203Mi

Practical Examples - Pod Design

```
kubectl create deployment my-dep --image=nginx --replicas=3 --port=5701
```

Practical Examples - Pod Design

Rolling updates, and rollbacks

```
kubectl set image deployment/nginx-deployment nginx=nginx:1.16.1 --record  
kubectl rollout status deployment/nginx-deployment  
kubectl rollout undo deployment/nginx-deployment
```

Jobs

```
kubectl create job my-job --image=busybox -- date  
https://kubernetes.io/docs/concepts/workloads/controllers/job
```

Cronjobs

```
https://kubernetes.io/docs/concepts/workloads/controllers/cron-jobs
```

Practical Examples - Services and Networking

Services

```
kubectl create service clusterip my-cs --tcp=5678:8080
```

```
kubectl create service nodeport my-ns --tcp=5678:8080
```

```
Kubectl expose deployment nginx --port=80 --target-port=8000 (--type=ClusterIP,NodePort)
```

Network policies

<https://kubernetes.io/docs/concepts/services-networking/network-policies/>

Practical Examples - State Persistence

Host path example

<https://kubernetes.io/docs/concepts/storage/volumes>

If you can't find something in the documentation
remember you can use the `kubectl explain` command

`kubectl explain pv --recursive`

`kubectl explain pod --recursive`

```
apiVersion: v1
kind: Pod
metadata:
  name: test-pd
spec:
  containers:
  - image: k8s.gcr.io/test-webserver
    name: test-container
    volumeMounts:
    - mountPath: /test-pd
      name: test-volume
  volumes:
  - name: test-volume
    hostPath:
      # directory location on host
      path: /data
      # this field is optional
      type: Directory
```


Practical Examples - State Persistence

We will do a separate talk on this as there is a lot to cover

<https://kubernetes.io/docs/tasks/configure-pod-container/configure-volume-storage>

<https://kubernetes.io/docs/tasks/configure-pod-container/configure-persistent-volume-storage>

Conclusion

Don't be afraid to fail. I failed my first attempt but it gave me a good opportunity to see where I needed to improve, and passed on my free retake with a high score.

Learn the basics first, you will save time in the long run, learn basic linux, learn VIM, learn kubectl well.

If you are having trouble getting a test environment to practice with maybe your cpu, ram on your computer can't run Kubernetes or can't afford it, reach out to me and I will see what I can do.

Have fun studying, and remember there is a wonderful community out there to help you!

Important Links -

<https://github.com/bradmccoydev/cncf-community-manly>

Links will be added to: <https://github.com/bradmccoydev/cncf-community-manly>

slack.k8s.io

<https://kubernetes.io/docs/contribute/participate>

slack.cncf.io

<https://www.cncf.io/certification/ckad>

vim.rtorr.com

<https://kubernetes.io/docs/home>

<https://itnext.io/kubernetes-journey-cka-ckad-exam-tips-ff73e4672833>

<https://events.linuxfoundation.org/kubecon-cloudnativecon-europe/register>

<https://community.cncf.io/manly>



Thank You

Join us: <https://community.cncf.io/manly>

CC-BY License

This presentation is licensed under a Creative Commons Attribution 4.0 International License.

See <https://creativecommons.org/licenses/by/4.0/> for more details.