

IBM Cloud Fast Start 2.0

# Problem Determination and Troubleshooting

N4ICP001

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Activate to win.

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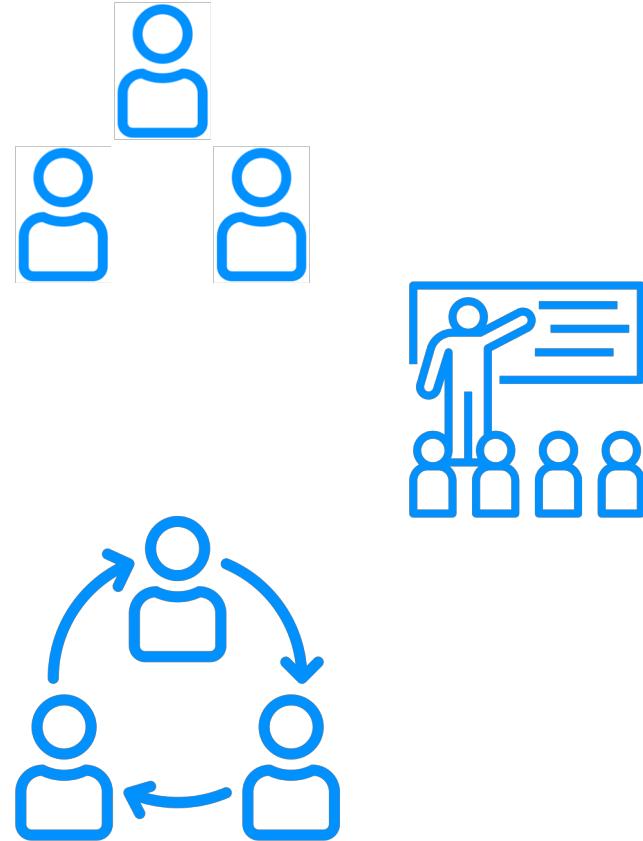
# Session Objectives

Attendees will be grouped in **teams** to facilitate collaborative work.

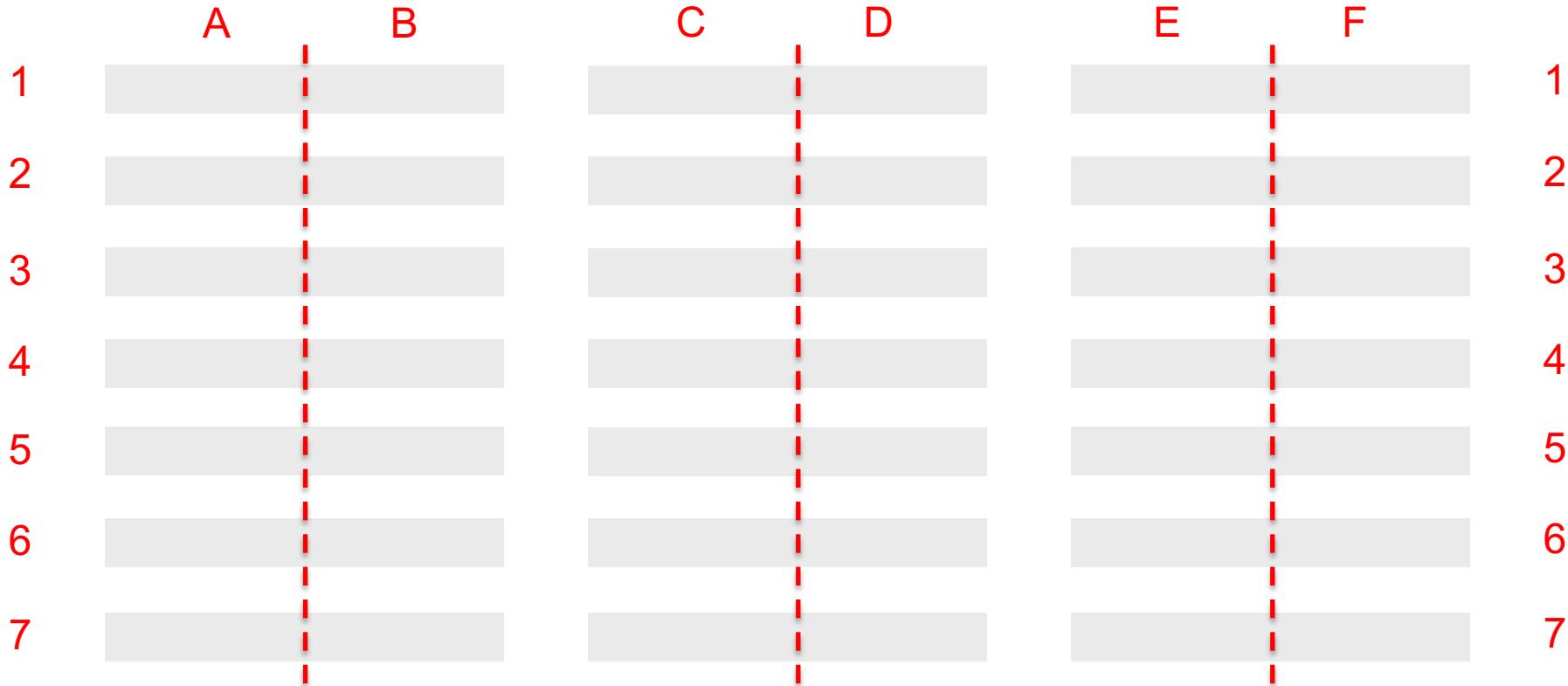
Multiple **lectures** regarding problem determination and troubleshooting will be presented.

Following most lectures will be **hands-on** work that each team collaborates to complete.

**Review** solutions after each lab.



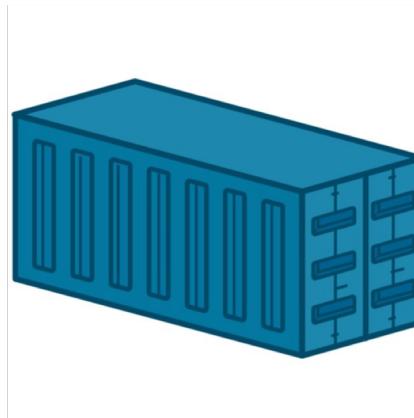
# Teams - for Labs



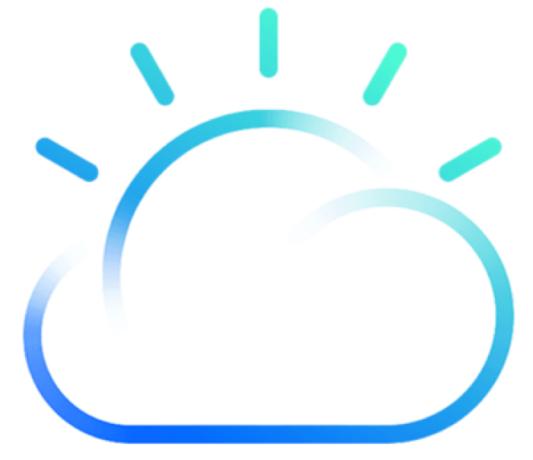
# Categories



Kubernetes



Container  
based apps



IBM Cloud  
Private

Focus will be on these three categories

# Lecture

## *Tools*



# Tools in “*YOUR*” tool kit



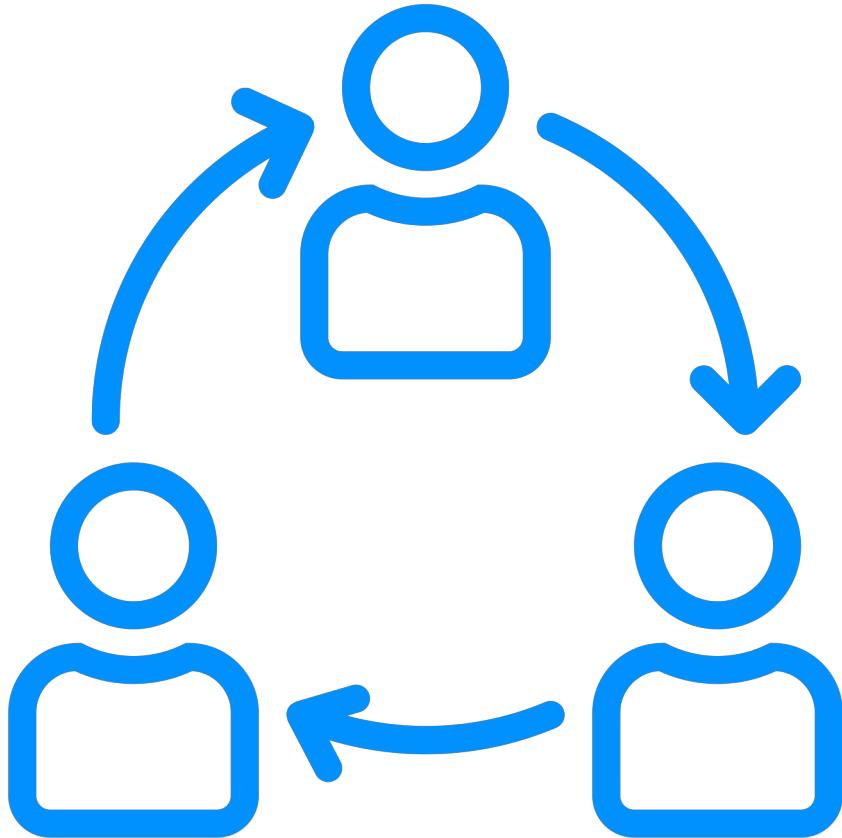
We need tools that give us  
answers to our questions!

# Tools to be used

- `cloudctl`
- `docker`
- `kubectl`

# Lab

## *Installing Tools*



# Lecture

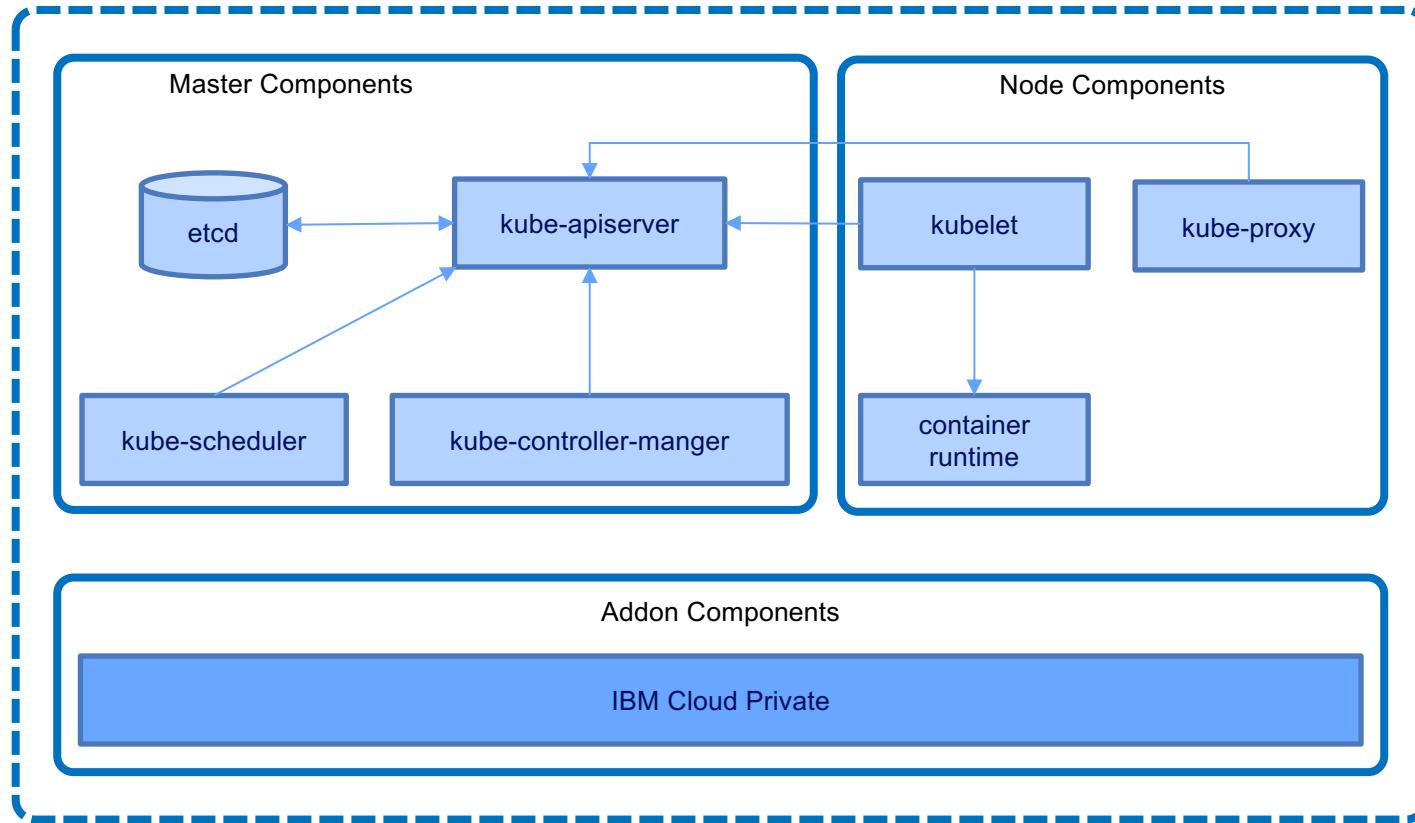
*The “Stack”  
&  
Kubernetes*



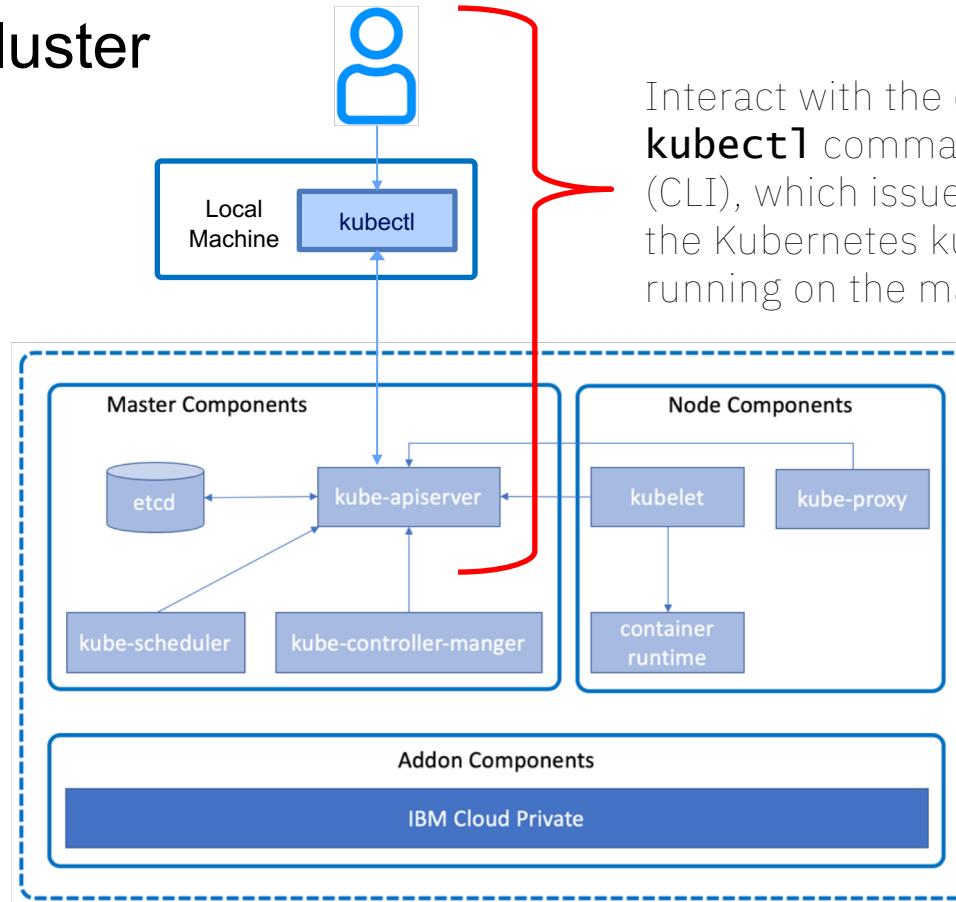
- Application
- Container
- K8 object (pod, deployment, service, etc.)
- Container runtime (Docker, Rocket, etc.)
- Kubernetes
- Network (host, overlay, etc.)
- Operating System (Red Hat, Ubuntu, etc.)
- Hypervisor (VMWare, Nutanix, etc.)
- Hardware (x86, Power, Z)

Understand  
the  
“stack”

# Components that make up a Kubernetes cluster



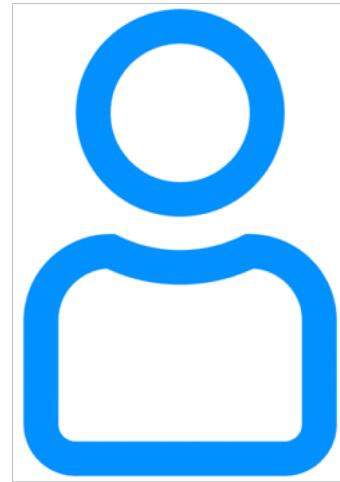
# Talking to a cluster



Interact with the cluster through the **kubectl** command line interface (CLI), which issues REST requests to the Kubernetes kube-apiserver running on the master node.

# Demo

*the Tools*



# Tools - docker

docker history <image> [--no-trunc ]

docker inspect <image>

docker events

```
dstart=$(date "+%Y-%m-%dT%H:%M:%S")
```

```
docker run ibmcom/icp-inception:3.1.1
```

```
dstop=$(date "+%Y-%m-%dT%H:%M:%S")
```

```
docker events --since $dstart --until $dstop
```

docker run --rm -it --entrypoint=/bin/bash ibmcom/icp-inception:3.1.1

# Tools - kubectl

kubectl top [node | pod]

kubectl –n <namespace> get <k8 type>

kubectl –n <namespace> describe <k8 type> <k8 object id>

kubectl –n <namespace> logs [-f] <k8 pod name>

kubectl –n <namespace> exec -it <k8 pod name> [-c <container name>] -- <cmd>

# Tools - cloudctl

cloudctl login --skip-ssl-validation

- API endpoint> https://169.62.194.213:8443

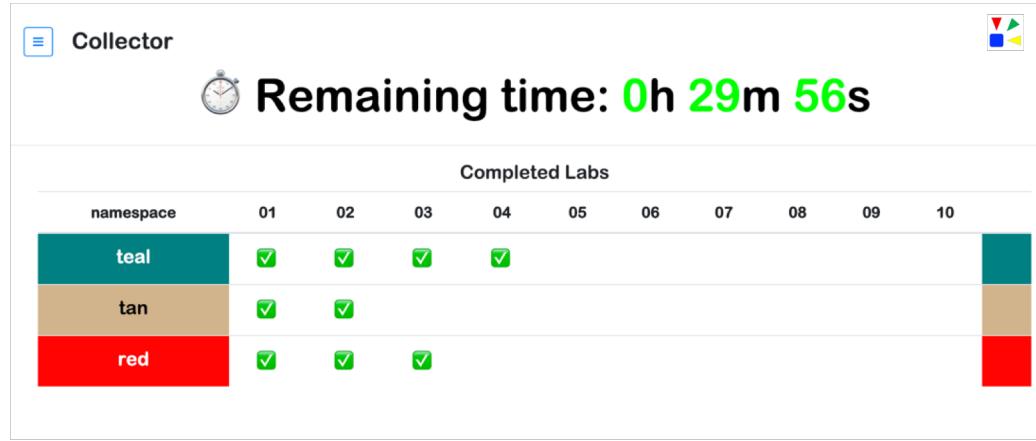
- Username> admin

- Password> (secret)

- Select a namespace:  
(namespaces will be shown with number)

- Enter a number:<enter the number for your team>

# Tracking progress during labs



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When to stop lab work





# Collector

Collector - beige

Statistics   Debug flow   Questions / Labs, Hints & Answers   Feedback

Completed Labs

namespace	01	02	03	04	05	06	07	08	09	10	Cnt
beige	✓	✓	✓	✓	○	○	○	○	○	○	0

Tracking completed items

Collector - beige

Statistics   Debug flow   Questions / Labs, Hints & Answers   Feedback

Select item from drop down, then press button to retrieve question/lab, hint, or answer.

Filter   select item   Question/Lab   Hint   Answer

Button selection and order is tracked

Collector - beige

Statistics   Debug flow   Questions / Labs, Hints & Answers   Feedback

Feedback

Enter feedback in the following section and press Send when complete

Please provide your feedback

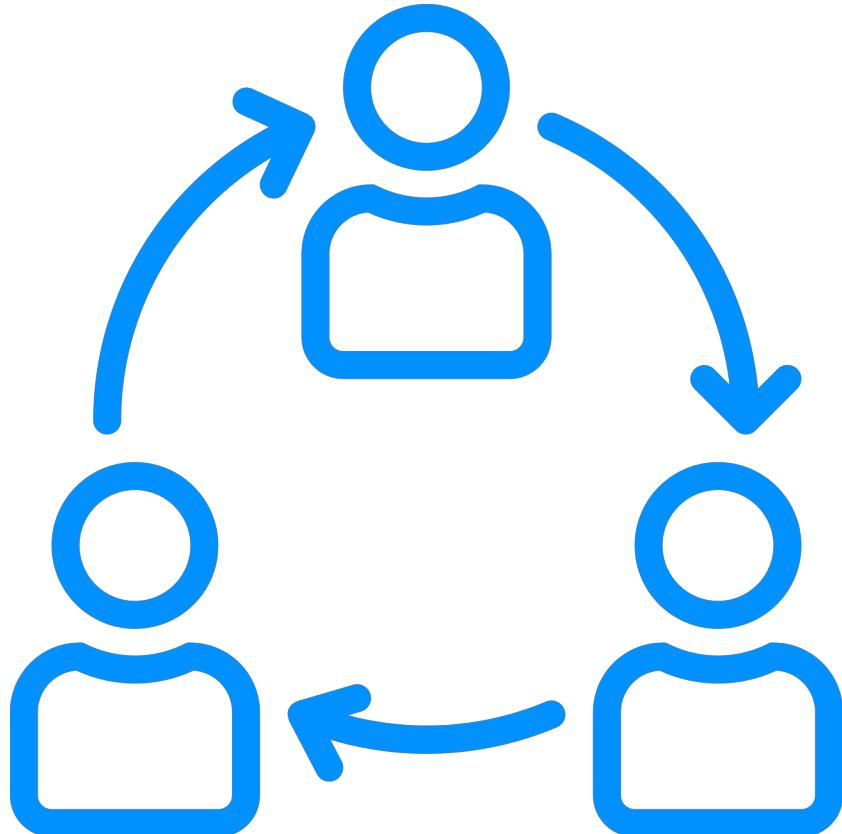
# Team web sites: ( IP address and port #'s will be provided by instructor )

<http://> IP address : team port #

	A	B	C	D	E	F	
1	port #	1					
2	port #	2					
3	port #	3					
4	port #	4					
5	port #	5					
6	port #	6					
7	port #	7					

# Lab

## *Using the Tools*



*Teams working  
together to answer  
the Questions*

# Lecture

## *Containers*

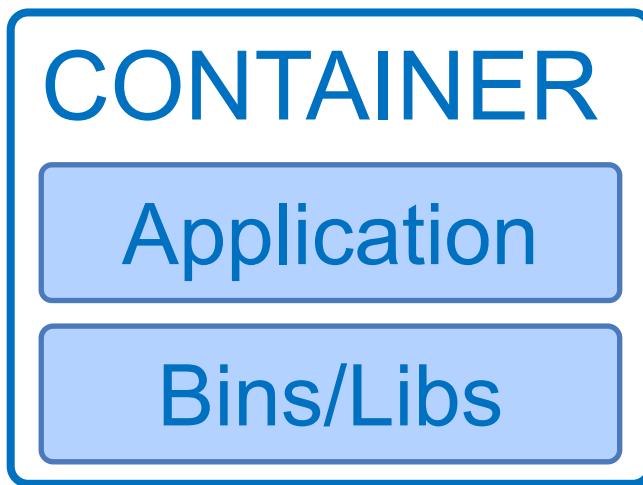
&

## *Apps*



# Components of a container based application

Docker



- Build
- Push
- Run
- Stop
- Inspect
- History
- Events

# Defining K8 objects

Indentation  
(spaces)

Hyphens

matter

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: avail-all
  namespace: avail
  labels:
    app: avail-all
spec:
  selector:
    matchLabels:
      app: avail-all
  replicas: 1
  template:
    metadata:
      labels:
        app: avail-all
    spec:
      containers:
        - name: avail-all
          image: ibmipccoc/avail:latest
          imagePullPolicy: Always
          command: ["/bin/bash", "-c", "/app/avail.sh"]
          env:
            - name: APP_NAMESPACE
              valueFrom:
                fieldRef:
                  fieldPath: metadata.namespace
            - name: APP_NAME
              valueFrom:
                fieldRef:
                  fieldPath: metadata.name
            - name: COLLECTOR_CONFIG
              valueFrom:
                configMapKeyRef:
                  name: avail-collector-config
                  key: COLLECTOR_CONFIG
            - name: INSTRUCTOR_CONFIG
              valueFrom:
                configMapKeyRef:
                  name: avail-collector-config
                  key: INSTRUCTOR_CONFIG
  resources:
    requests:
      cpu: 100m
      memory: 100Mi
```

yaml



Quotes

Commas

matter

```
{
  "kind": "Deployment",
  "metadata": {
    "name": "avail-all",
    "namespace": "avail",
    "labels": {
      "app": "avail-all"
    }
  },
  "spec": {
    "selector": {
      "matchLabels": {
        "app": "avail-all"
      }
    },
    "replicas": 1,
    "template": {
      "metadata": {
        "labels": {
          "app": "avail-all"
        }
      },
      "spec": {
        "containers": [
          {
            "name": "avail-all",
            "image": "ibmipccoc/avail:latest",
            "imagePullPolicy": "Always",
            "command": [
              "/bin/bash",
              "-c",
              "/app/avail.sh"
            ],
            "env": [
              {
                "name": "APP_NAMESPACE",
                "valueFrom": {
                  "fieldRef": {
                    "fieldPath": "metadata.namespace"
                  }
                }
              },
              {
                "name": "APP_NAME",
                "valueFrom": {
                  "fieldRef": {
                    "fieldPath": "metadata.name"
                  }
                }
              }
            ]
          }
        ]
      }
    }
  }
}
```

json

# What's running in the container

k8

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: avail-all
  namespace: avail
  labels:
    app: avail-all
spec:
  selector:
    matchLabels:
      app: avail-all
  replicas: 1
  template:
    metadata:
      labels:
        app: avail-all
    spec:
      containers:
        - name: avail-all
          image: ibmcpoc/avail:latest
          imagePullPolicy: Always
          command: ["/bin/bash", "-c", "/app/avail.sh"]
```



docker

```
FROM alpine
MAINTAINER IBM ICP CoC Team

CMD mkdir /app
WORKDIR /app
COPY avail.sh .

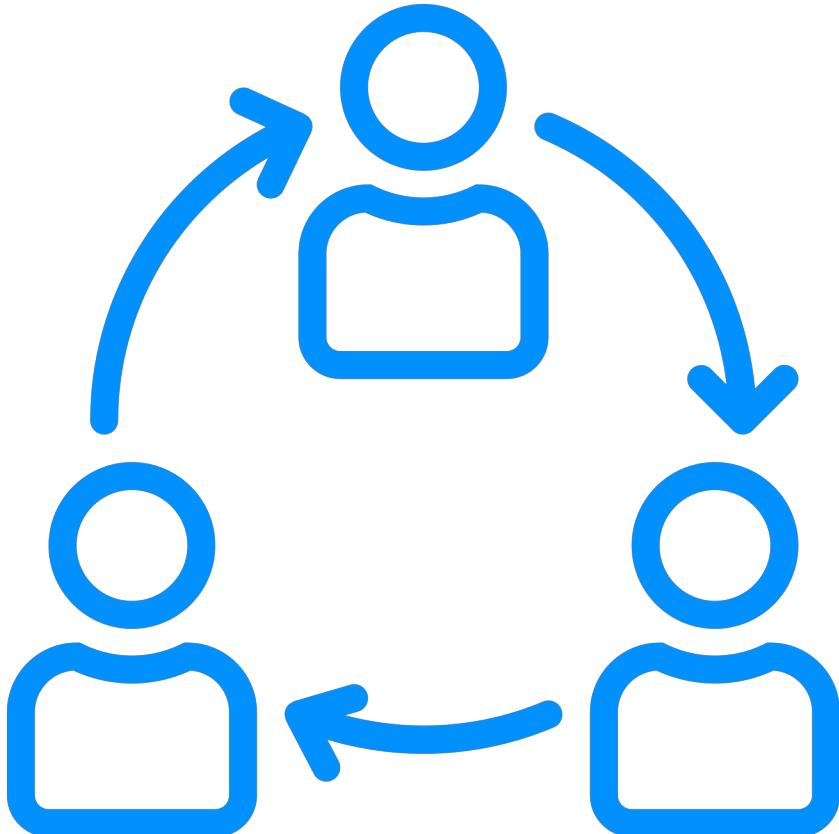
RUN apk add curl bash nano \
&& chmod +x avail.sh

CMD ["/bin/bash", "-c", "./avail.sh"]
```

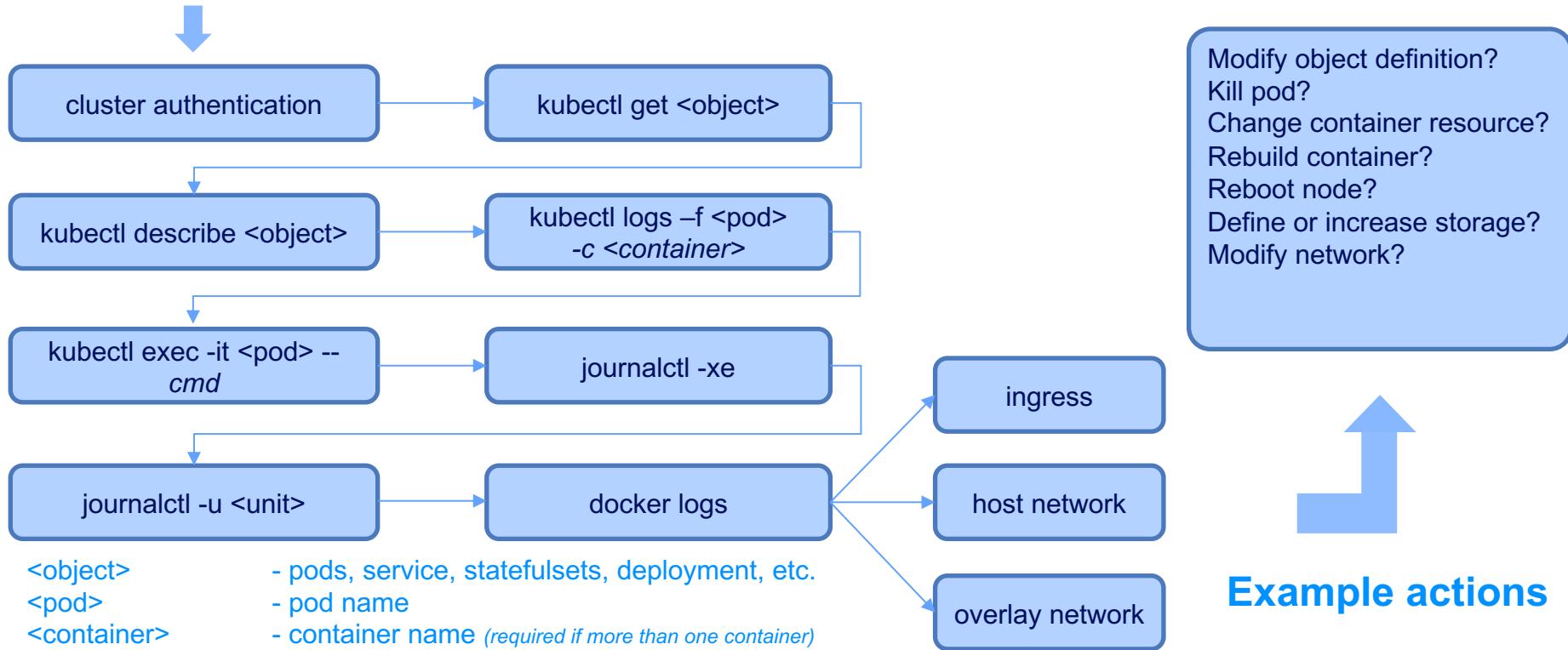


# Lab

*Fixing  
stuff that's  
broken*



# Example debug process



Example actions

# Don't forget to check

- Security
- Networking
- Storage
- Images
- CPU & Memory

*Teams working  
together to complete  
the Labs*

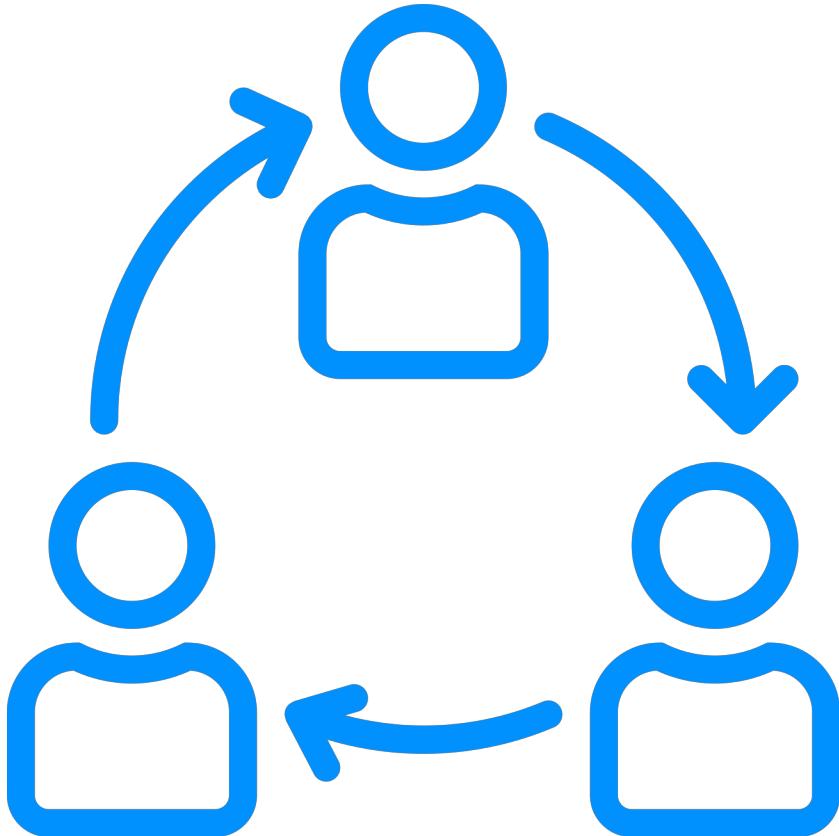
# Lecture

*ICP*



# Lab

*Trouble-  
shoot  
ICP*



# What's in ICP?

- audit\*
- auth\*
- calico\*
- k8\*
- key-management\*
- logging\*
- metering\*
- monitoring\*

Not a complete list

*Teams working  
together to complete  
the ICP Labs*

# Support

## Slack #private-cloud

Intended for quick answers through swarming,  
especially How To, Known Issues, best practices etc.

Cases can be opened at  
<https://ibm.biz/icpsupport>

If you can't open a case, please see <https://ibm.biz/BdYuiZ>



# Get Session Credit

1. Open up the Fast Start event app
2. Find this session in your schedule

Session Name: Problem Determination and Trouble Shooting

Session ID: 7440

3. Click on 'check in'
4. Enter the code

7440

5. Don't forget the session survey!



# Thank you

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## Social Tips & Tricks Videos (pinned in #dte-social Slack channel)

<https://bit.ly/linked-profile>

<https://bit.ly/linked-headline>

<http://bit.ly/link-communities>

## Community Videos (pinned in #IBMCommunity Slack channel)

<http://ibm.biz/community-intro>

<http://ibm.biz/community-groups>

<http://ibm.biz/community-notification>

## Meetup Information (starter kit & training)

<http://ibm.biz/meetup-kit>

<http://ibm.biz/meetup-training>

## Recorded Lunch and Learn

<http://bit.ly/social-lnl>

## DTE Social Handles (on ZACs)

<http://ibm.biz/dte-social>

## IBM Cloud Social Handles

<http://ibm.biz/cloud-social>

## DTE Blog Calendar

<http://ibm.biz/blog-calendar>

## Social Selling Badges

<https://ibm.co/2yGFm00>



