Kubernetes Run, Create, and Apply

- Kubernetes is evolving, and so is the CLI
- We get three ways to create pods from the kubectl CLI
  - > kubectl run (single pod per command since 1.18)
  - > kubectl create (create some resources via CLI or YAML)
  - > kubectl apply (create/update anything via YAML)
- For now we'll just use run or create CLI
- Later we'll learn YAML and pros/cons of each

Creating a Pod with kubectl

- Are we working?

  > kubectl version
- Two ways to deploy Pods (containers): Via commands, or via YAML
- Let's run a pod of the nginx web server!

  > kubectl run my-nginx --image nginx
- Let's list the pod

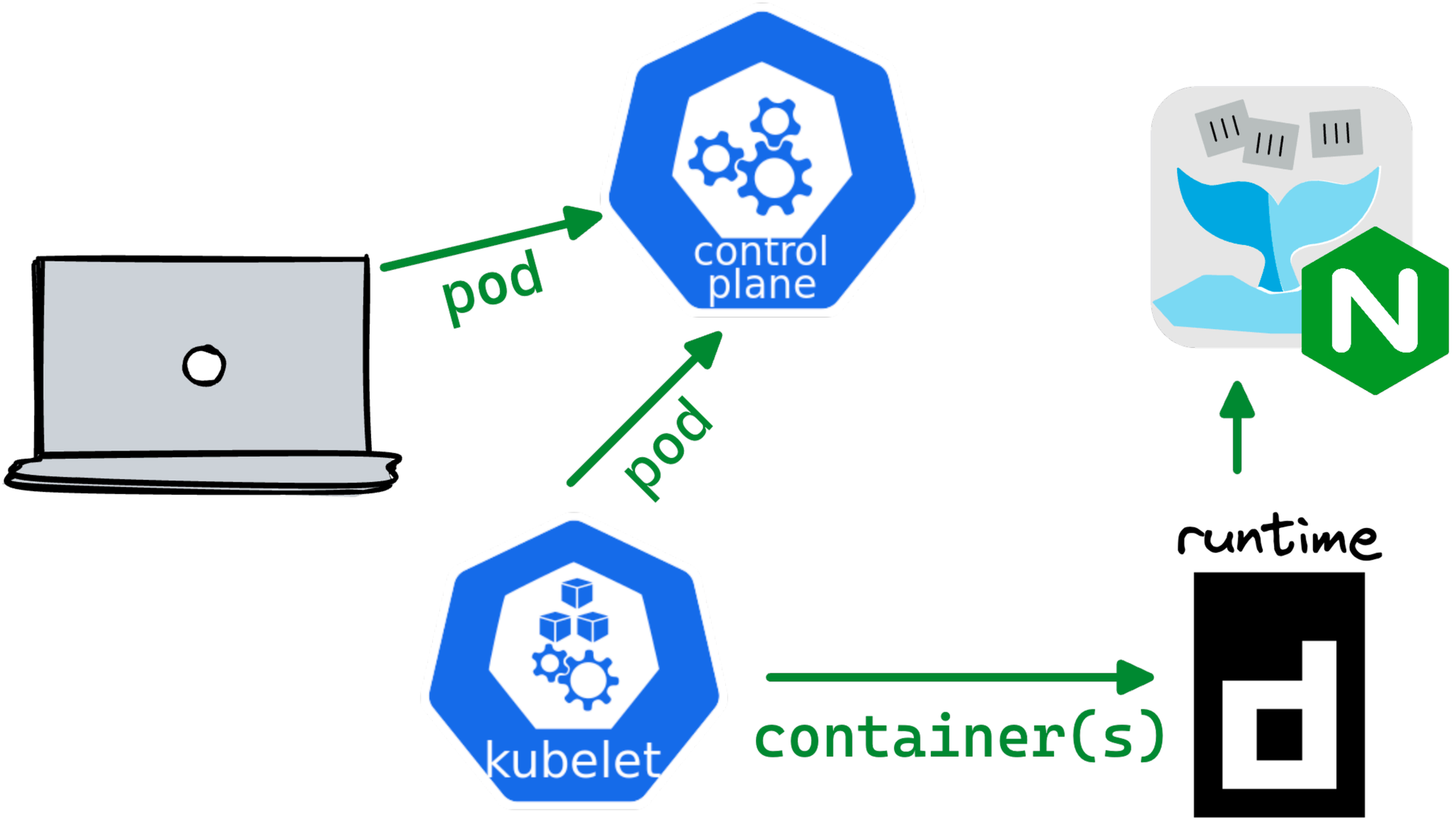
  > kubectl get pods
- Let's see all objects

  > kubectl get all

Pods: Why do they exist?

- Unlike Docker, you can't create a container directly in K8s
- You create Pod(s) (via CLI, YAML, or API)
  - Kubernetes then creates the container(s) inside it
- kubelet tells the *container runtime* to create containers for you
- Every type of resource to run containers uses Pods

Container runtimes don't know pods



Creating a Deployment with kubectl

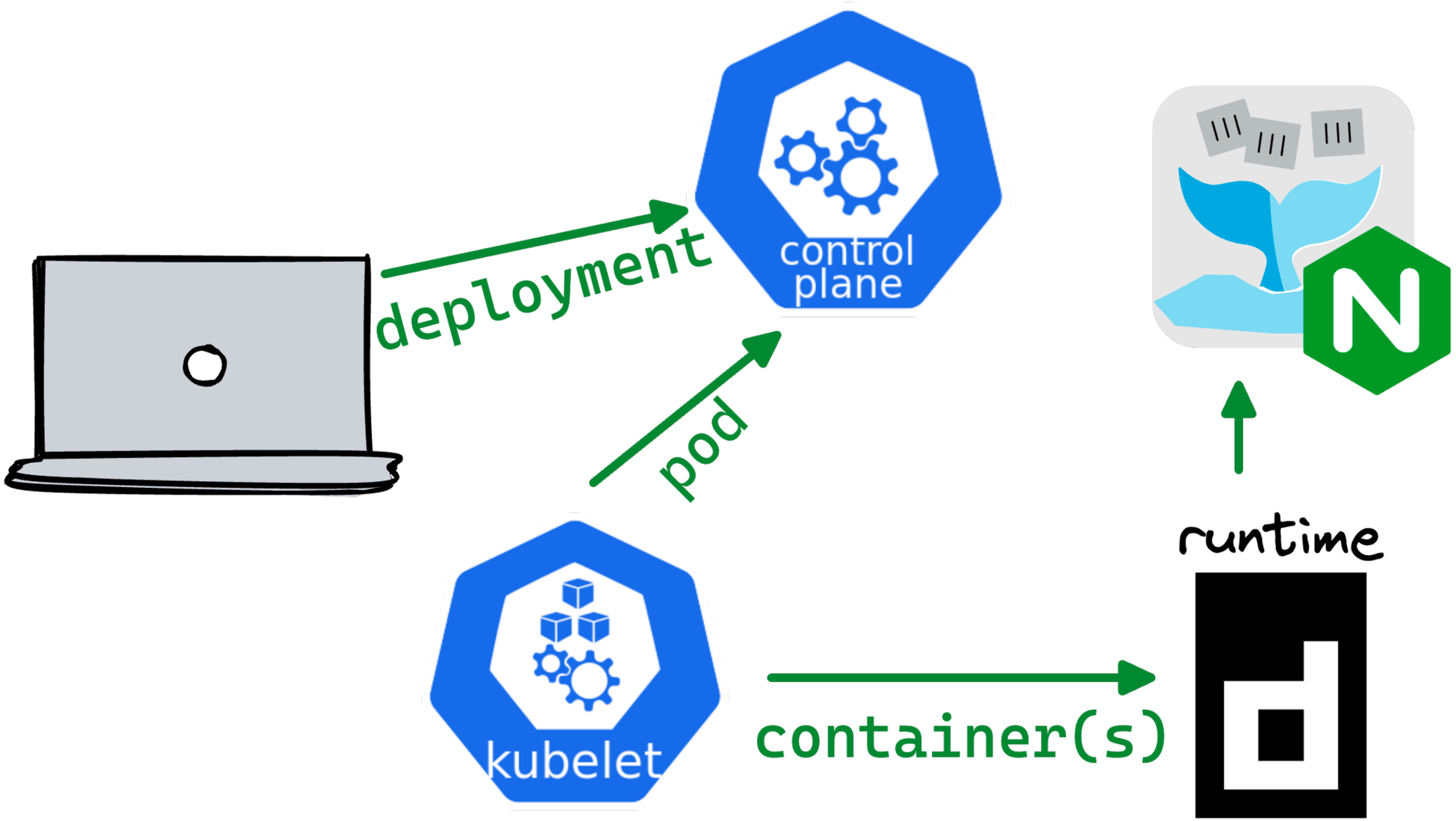
- Let's create a Deployment of the nginx web server!

  > kubectl create deployment my-nginx --image nginx
- Let's list the pod

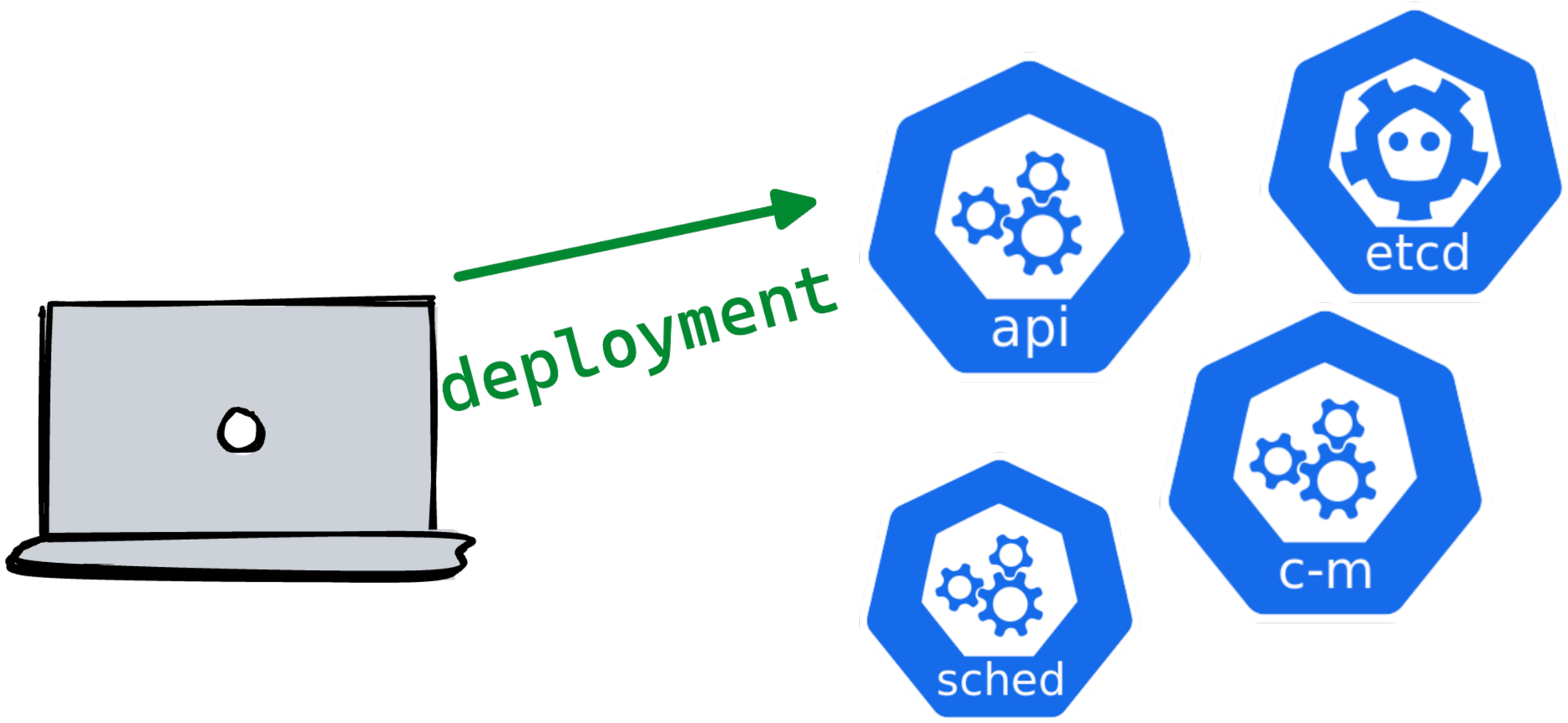
  > kubectl get pods
- Let's see all objects

  > kubectl get all

Deployment -> ReplicaSet -> Pods



Deployment -> ReplicaSet -> Pods



Cleanup

- Let's remove the single Pod and the Deployment

  > kubectl delete pod my-nginx

  > kubectl delete deployment my-nginx

Scaling ReplicaSets

- Start a new deployment for one replica/pod

  > kubectl create deployment my-apache --image httpd

- Check our resource status

  > kubectl get all

- Let's scale it up with another pod

  > kubectl scale deploy/my-apache --replicas 2

  > kubectl scale deploy my-apache --replicas 2

  - those are the same command
  - deploy = deployment = deployments

What happened when we scaled?

- kubectl scale will *change* the deployment/my-apache record
- CM will see that *only* replica count has changed
- It will change the number of pods in ReplicaSet
- Scheduler sees a new pod is requested, assigns a node
- Kubelet sees a new pod, tells container runtime to start httpd

Don't Cleanup

- We'll use these httpd containers in the next lecture