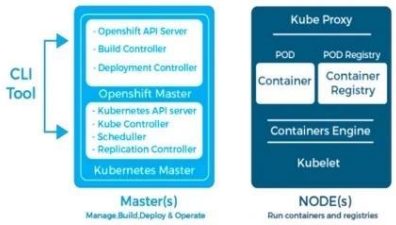
KUBERNETES CHEAT SHEET

KUBERNETES

- It is an open source platform for automating deployment and scaling of containers across clusters of hosts providing container centric infrastructure.
- It is a container orchestrator and can run Linux containers:
  - Launch container.
  - Maintain and monitor container site.
  - Performs container-oriented networking



Key Concepts

Now let's discuss the key points of this architecture.

- **Pod:** These are the group of containers.
- **Labels:** These are used to identify the pods.
- **Kubelet:** They are container agents, responsible for maintaining the set of pods.
- **Proxy:** They are the Load balancer for pods, helping in distributing tasks across the pods.
- **ETCD:** A Metadata service.
- **Cadvisor:** For resource usage and performance stats.
- **Replication controller:** It manages pod replication.
- **Scheduler:** Used for pod scheduling in worker nodes.
- **API server:** Kubernetes API server.

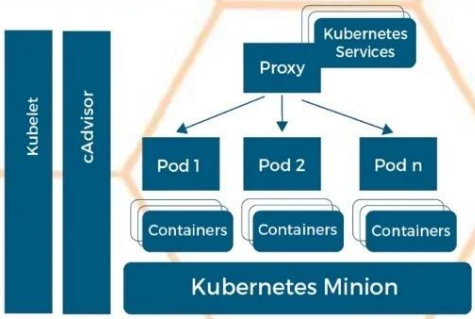
Now let's understand the role Master and Node play in the Kubernetes Architecture.

Master

- It is responsible for maintaining the desired state for the cluster you are working on.
- "Master" indicates a set of processes that are used to manage the cluster.
- Contains info, API, scheduler, replication controllers, and master.

Worker Nodes/Minions

- Also called as a minion. It contains the services necessary to run the pods that are managed by the master.
- Some services include: container runtime, Kubelet, kube-proxy.
- Contains: Kubelet, cAdvisor, services, pods and containers.



Features

- **Automated scheduling-** provides an advanced scheduler that helps launch container on cluster nodes
- **Self healing-** reschedule, replace and restart dead containers.
- **Automated rollouts and rollbacks-** supports rollback incase of a failure. Enables rollout and rollback for t… desir… stat…
- **Horizontal scaling-** can scale up and down the app as … Can also be automated wrt CPU usage.
- **Service discovery and load balancing-** uses unique IP address to containers. This helps identify them across different containers.

Kubectl Command List

- **Pods and Container Introspection**

COMMANDS	FUNCTION
Kubectl get pods	Lists all current pods
Kubectl describe pod<name>	Describes the pod names
Kubectl get rc	List all replication controllers
Kubectl get rc --namespace="namespace"	Lists replication controllers in namespace
Kubectl describe rc <name>	Shows the replication controller name
Kubectl get cvc	Lists the services
Kubectl describe svc<name>	Shows the service name
Kubectl delete pod<name>	Deletes the pod
Kubectl get nodes -w	Watch nodes continuously

- **Debugging**

FUNCTION	COMMAND
Execute command on service by selecting container.	Kubectl exec<service><commands>[-c< $container>]
Get logs from service for a container	Kubectl logs -f<name>>[-c< $container>]
Watch the kubelet logs	Watch -n 2 cat/var/log/kublet.log
Show metrics for node	Kubectl top node
Show metrics for pods	Kubectl top pod

- **Objects**

All	clusterrolebindings	clusterroles
cm= conf gmaps	controllerrevisions	crd=custom resource definition
Cronjobs	cs=component status	csr= certificate signing requests
Deploy=deployments	ds= daemon sets	ep=end points
ev= events	hpa= autoscaling	ing= ingress
jobs	limits=limit ranges	Netpol- network policies
No = nodes	ns= namespaces	pdb= pod
po= pods	Pod preset	Pod templates
Psp= pod security policies	Pv= persistent volumes	pvc= persistent volume claims
quota= resource quotas	rc= replication controllers	Role bindings
roles	rs= replica sets	sa=service account
sc= storage classes	secrets	sts= stateful sets

- **Cluster Introspection**

FUNCTION	COMMAND
Get version information	Kubectl version
Get cluster information	Kubectl cluster-info
Get the configuration	Kubectl config g view
Output info about a node	Kubectl describe node<node>

Other Quick Commands

Launch a pod with a name an image : Kubectl run<name> --image=<image-name>
Create a service in <manifest.yaml> : Kubectl create -f <manifest.yaml>
Scale replication counter to count the number of instances : Kubectl scale --replicas=<count>

Map external port to internal replication port : Expose rc<name> --port=<external>--target-port=<internal>
To stop all pod in <n> : Kubectl drain<n>-- delete-loc... ...ignore-daemonset
Allow master nodes to run pods : Kubectltaintnodes --all-node-role.kuernetes.io/master-