KUBERNETES SIMPLIFIED

A VISUAL GUIDE ON KUBERNETES

BY PAVAN GUDIWADA

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The Book

This Book is a collection of the simplified Kubernetes guides I made in the past few months. I will be improving as I make more guides.

Acknowledgments

- ★ Saiyam Pathak (@SaiyamPathak) - Your continuous support made this possible.
- ★ Ankit Mehta (@ankyitm) - Thank you for believing and encouraging me to do more.
- ★ JJ Thompson (@samjn08) - For the amazing book cover.
- ★ Everyone that supported me and my content.

About the Author

I am an Azure DevOps Engineer and FOSS lover. I Started making these visuals as a challenge to simplify what I learn. The love from the Cloud Native and Kubernetes community was overwhelmingly positive. These days I contribute to Kubesimplify as an editor and also help the team with managing projects.

I also write blogs and share everything I learn in public. Ankit and I host Community calls about Azure, Kubernetes and cloud in general. I'm always open for a chance to speak in public or contribute to the community.

My content

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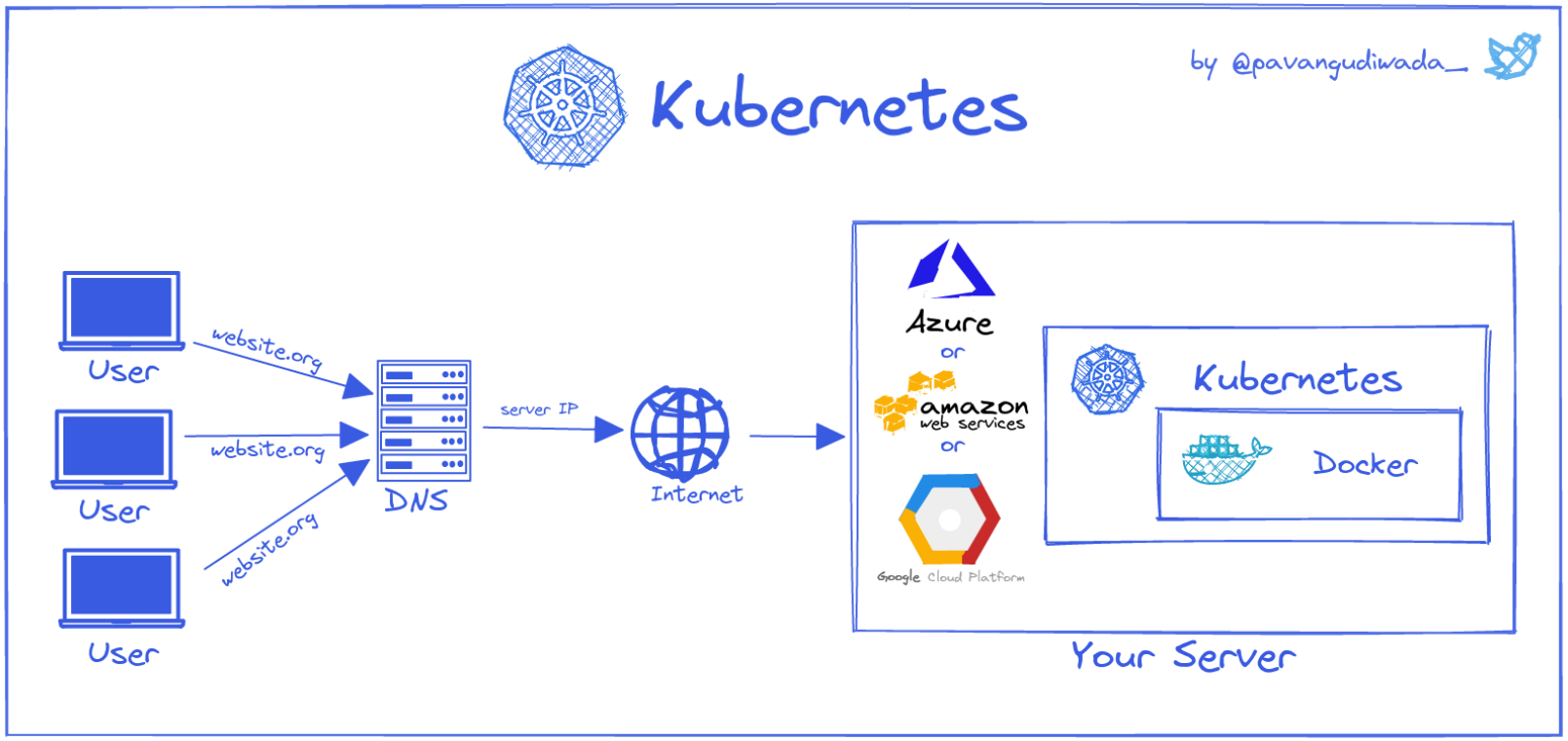
Kubernetes Basics

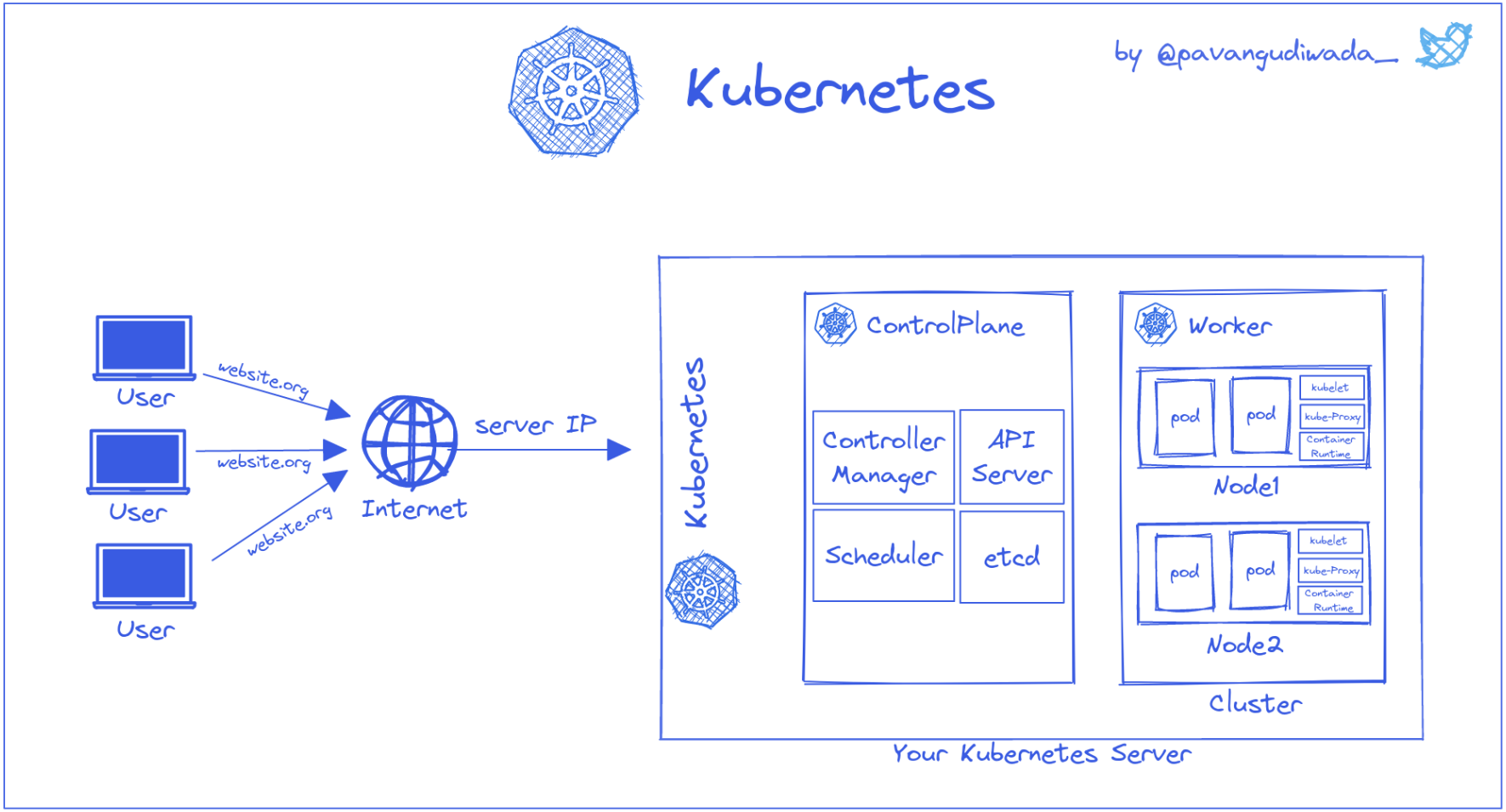
Kubernetes-as-a-Service

- You can self-host your own kubernetes cluster or use one of the Kubernetes-as-a-Service(KaaS) offered by cloud providers.
- When you use KaaS, you don't have to worry about managing the Kubernetes Control Plane.
- If you are a large enterprise and want to achieve a Highly available Kubernetes Cluster, KaaS can benefit you a lot.
- "Docker" is one of the container Runtimes for Kubernetes and you don't have to always use it.



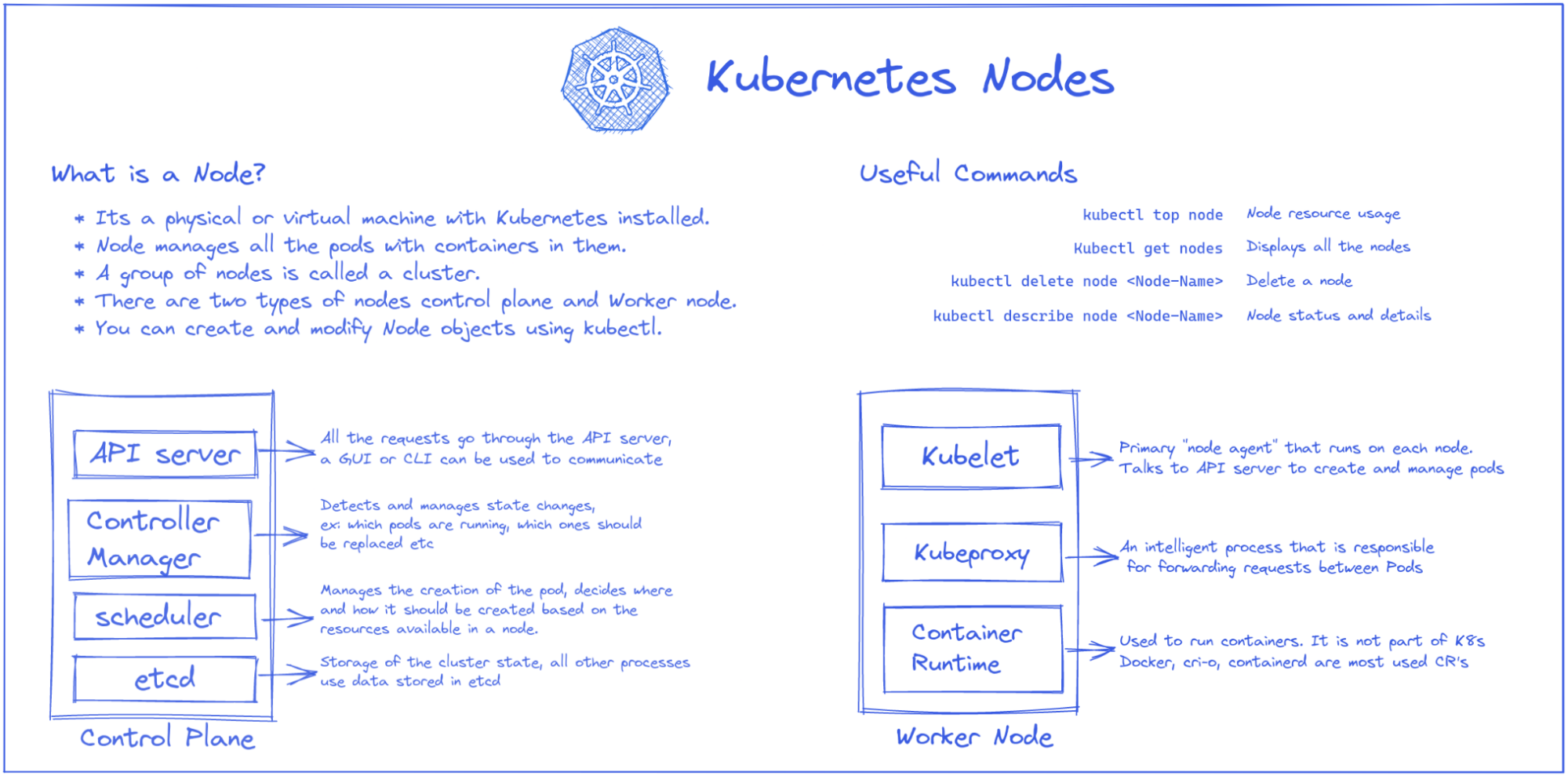
Inside KaaS

- Regardless of you using Kubernetes-as-a-Service, your data is sent to a server configured with Kubernetes.
- There can be one or more nodes in a cluster. You can also use a single node as your Control Plane and worker Node.
- If you are learning Kubernetes locally, you can use a single node cluster to practice. Eg: Minikube.



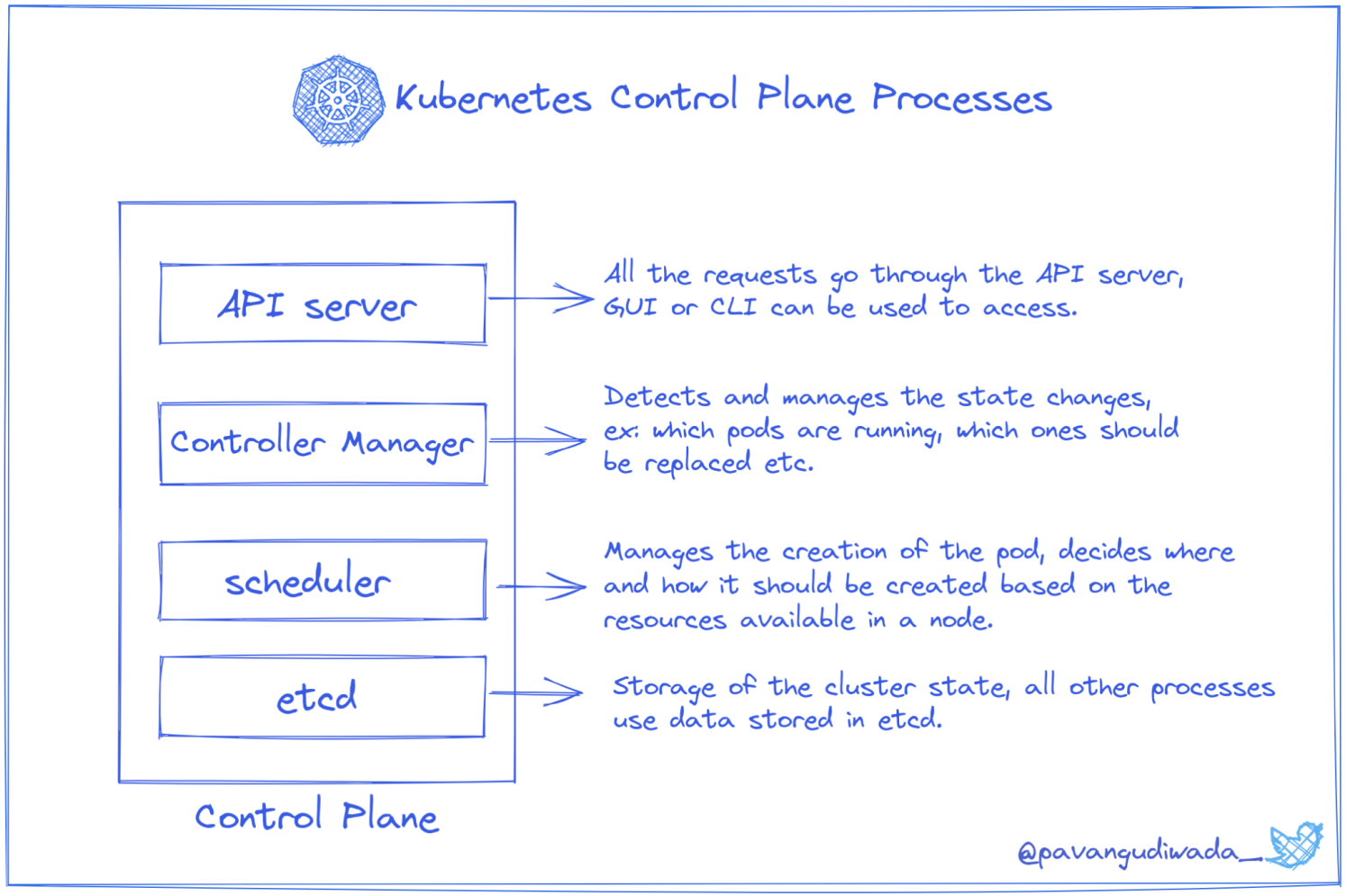
Kubernetes Nodes

Node Basics



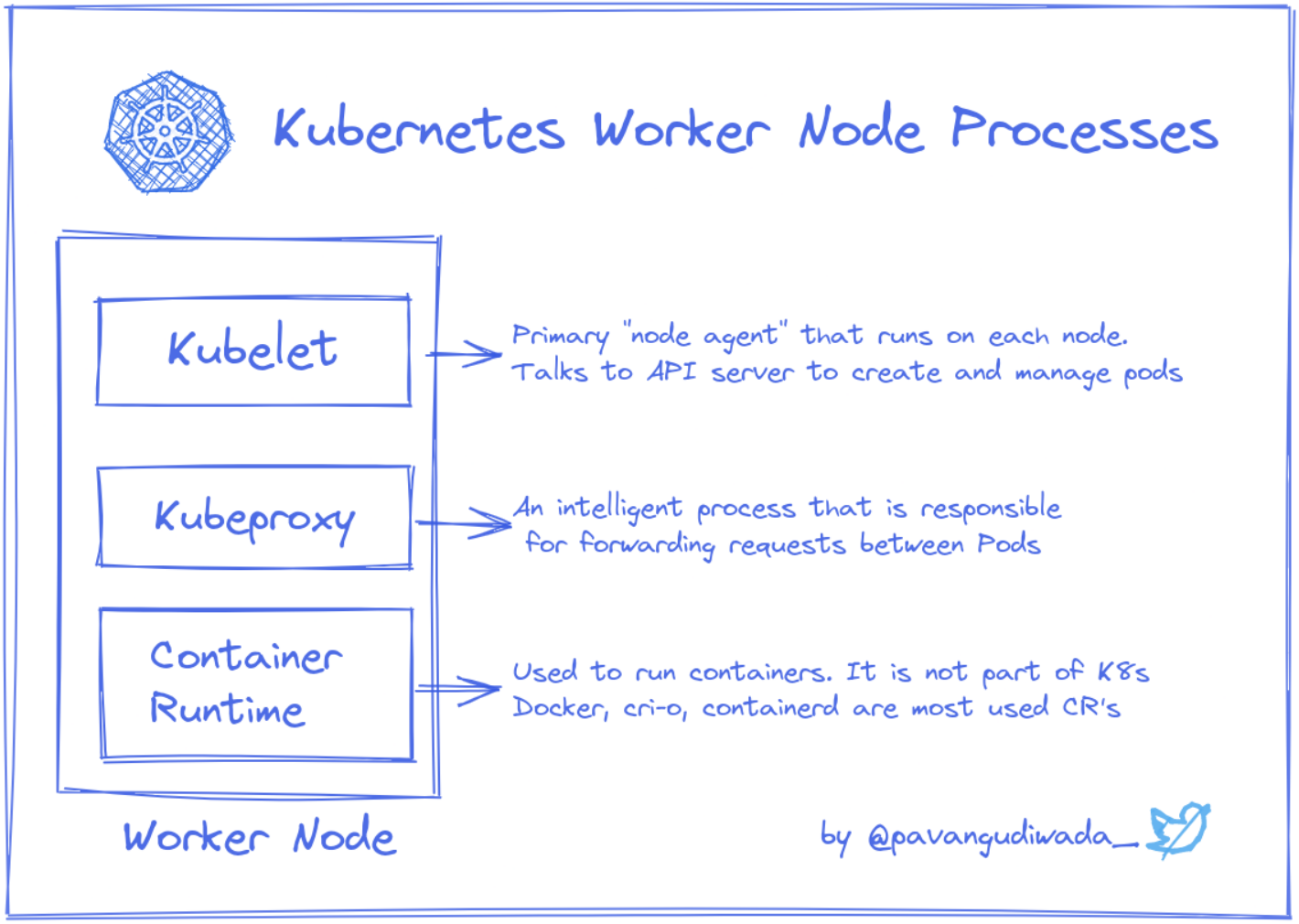
Control Plane Processes

- Control plane manages your cluster and all of your worker nodes.
- You will create a control plane and then connect your worker nodes to it.
- More than one Control Planes can be used to achieve a Highly Available cluster.



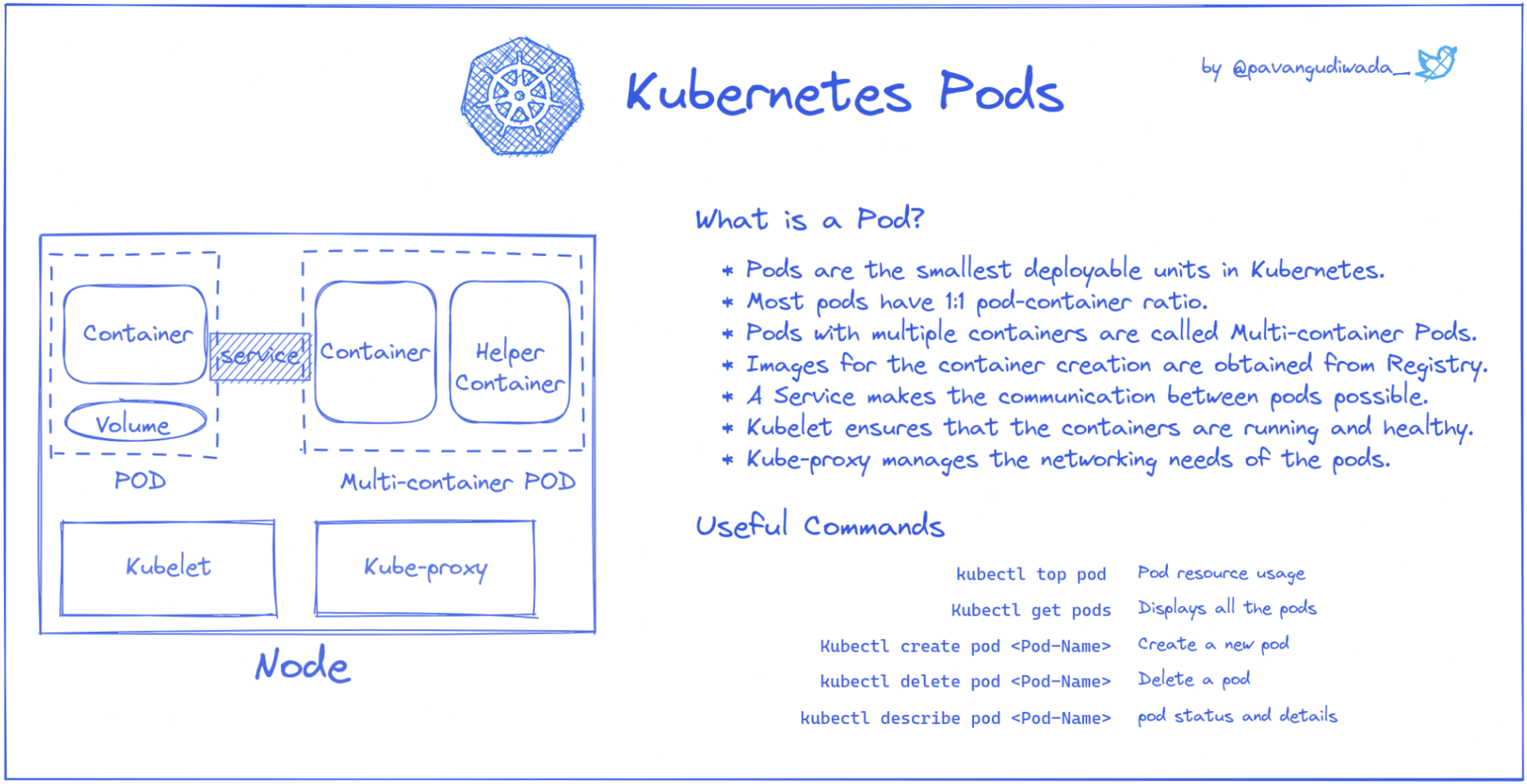
Worker Node Processes

- Your applications are scheduled on the worker node by the "Scheduler".
- Networking inside the cluster is done using a Cluster Network Interface. Eg: Calico.



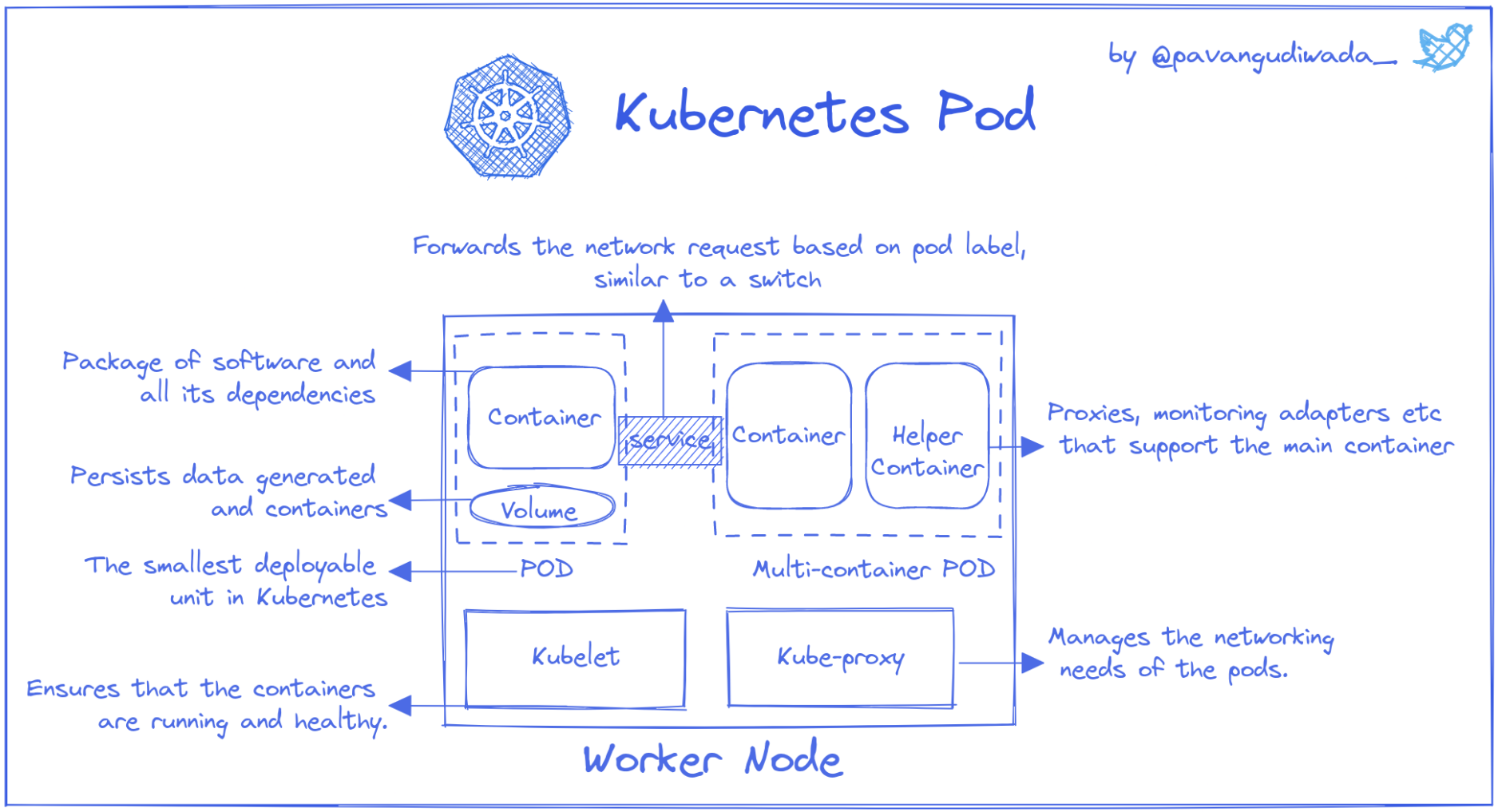
Kubernetes Pods

Pod



Pod components

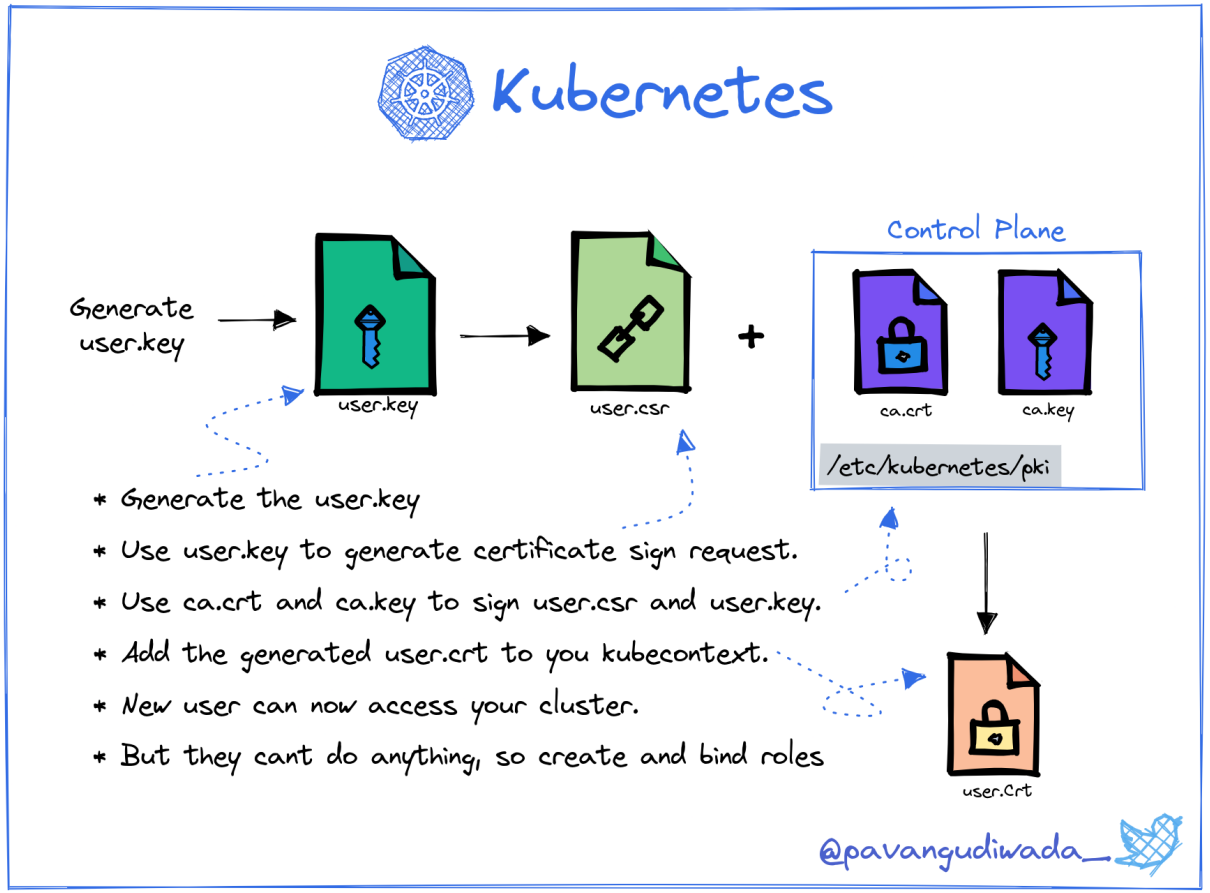
- A Kubernetes Pod can have multiple containers that run before the main container is started.
- They can be used to check the health, initialize volumes etc.



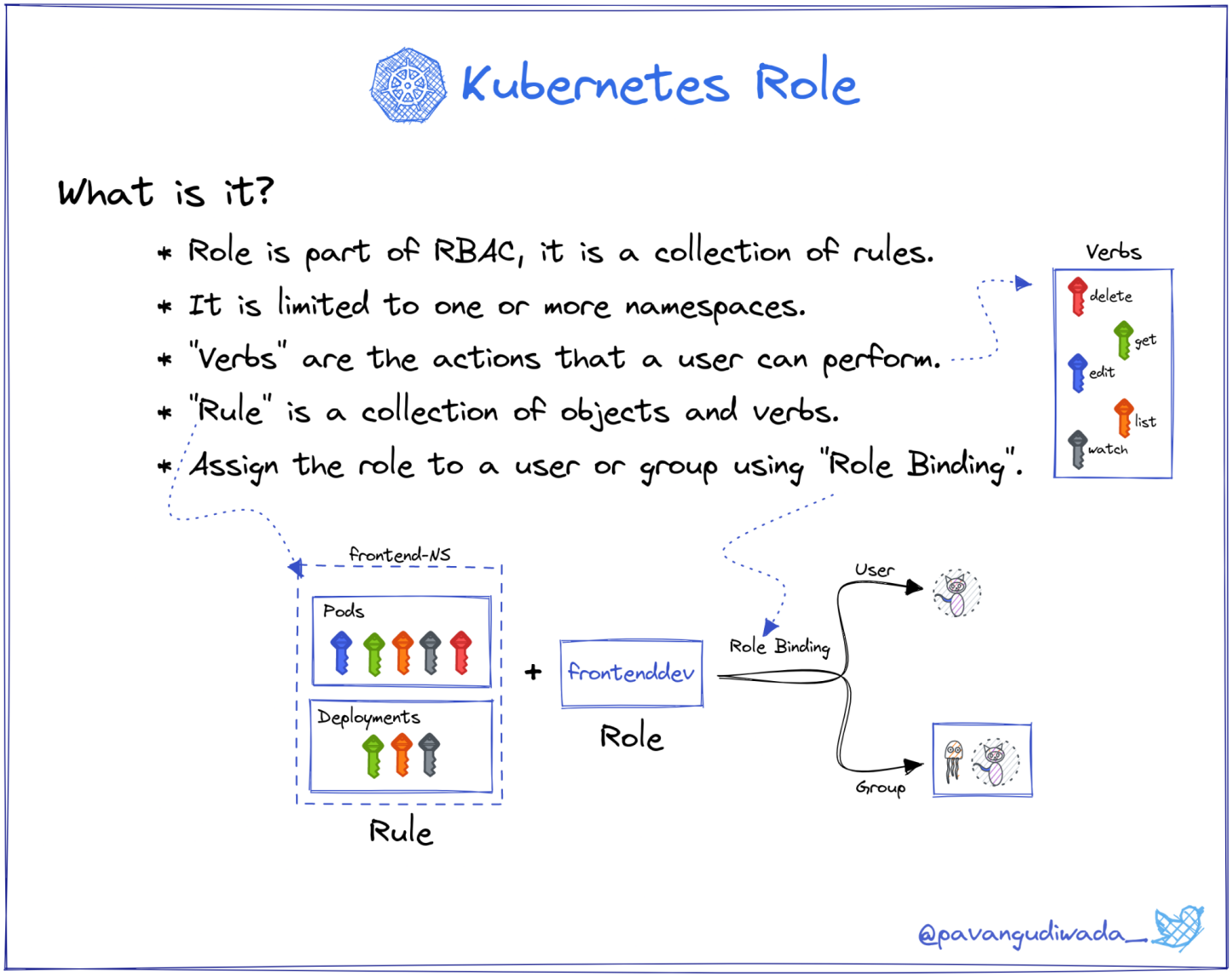
Kubernetes RBAC

Certificate Creation

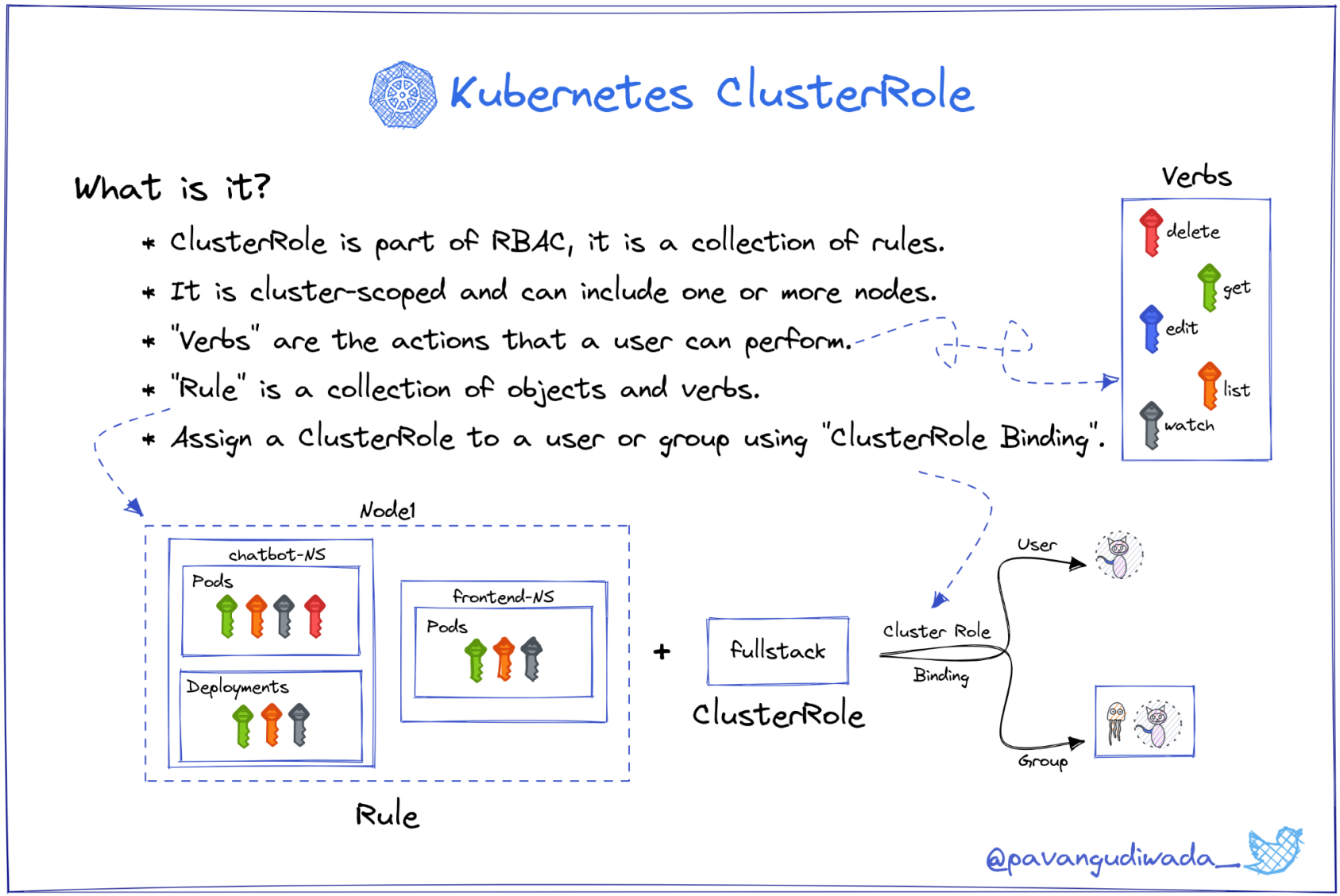
- Kubernetes uses Certificates to authenticate users. This is called Role Based Access Control(RBAC).
- When a control plane is initialized the Certificate Authority generated certificates are stored and used to validate users.



Role


Kubernetes Role
What is it?
* Role is part of RBAC, it is a collection of rules.
* It is limited to one or more namespaces.
* "Verbs" are the actions that a user can perform.
* "Rule" is a collection of objects and verbs.
* Assign the role to a user or group using "Role Binding".
Verbs
delete
get
edit
list
watch
frontend-NS
Pods
Deployments
Rule
+
frontenddev
Role
Role Binding
User
Group
@pavangudiwada_

ClusterRole



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