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# Running Workloads in Kubernetes

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## Amazon AWS S3 outage is breaking things for a lot of websites and apps

Posted Feb 28, 2017 by [Darrell Etherington \(@etherington\)](#)



Next Story



<https://goo.gl/dWYJq4>



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**Rob Scott**  
@robertjscott

VP of Software Architecture @Spire

Follow

So [@kubernetesio](#) is basically magic. It automatically redistributed our systems after instance failure in today's AWS outage - no downtime.

RETWEETS

134

LIKES

250



5:02 PM - 28 Feb 2017

<https://goo.gl/2NLT0f>



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## Concept

- | **Kubernetes:** a platform for application patterns
- | **Pod:** a single instance of an application in Kubernetes
- | **Controller:** manages replicated pods for an application pattern



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**Master node**

**Worker node**

**Worker node**



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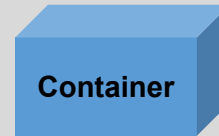
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Master node

Worker node

Pod

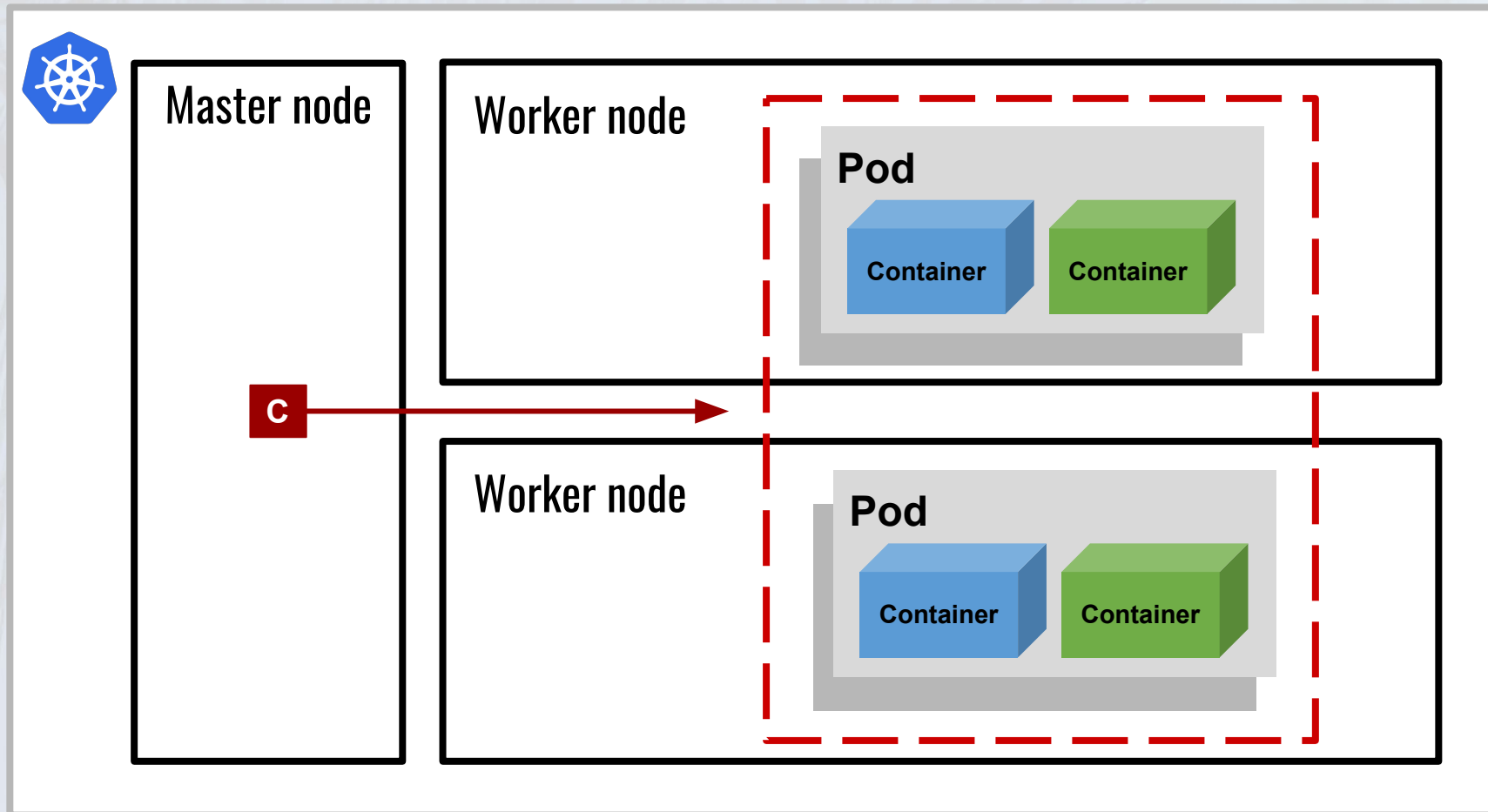




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## 4 Common, General Patterns

- | Stateless
- | Stateful
- | Daemon
- | Batch





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## 4 Common, General Patterns

| **Stateless:** web frontends, web servers



| Stateful

| Daemon

| Batch



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## 4 Common, General Patterns

| Stateless: web frontends, web servers

| **Stateful**: databases, message queues

| Daemon

| Batch

NGINX



mongoDB





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## 4 Common, General Patterns

| Stateless: web frontends, web servers

| Stateful: databases, message queues

| **Daemon**: logs collection, node monitoring

| Batch





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## 4 Common, General Patterns

| Stateless: web frontends, web servers

| Stateful: databases, message queues

| Daemon: logs collection, node monitoring

| **Batch**: processing of independent work items





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## Stateless: Deployment

| Availability

| Scale, Deploy, Rolling Update

| e.g. Web apps, mobile backends, API servers, ...

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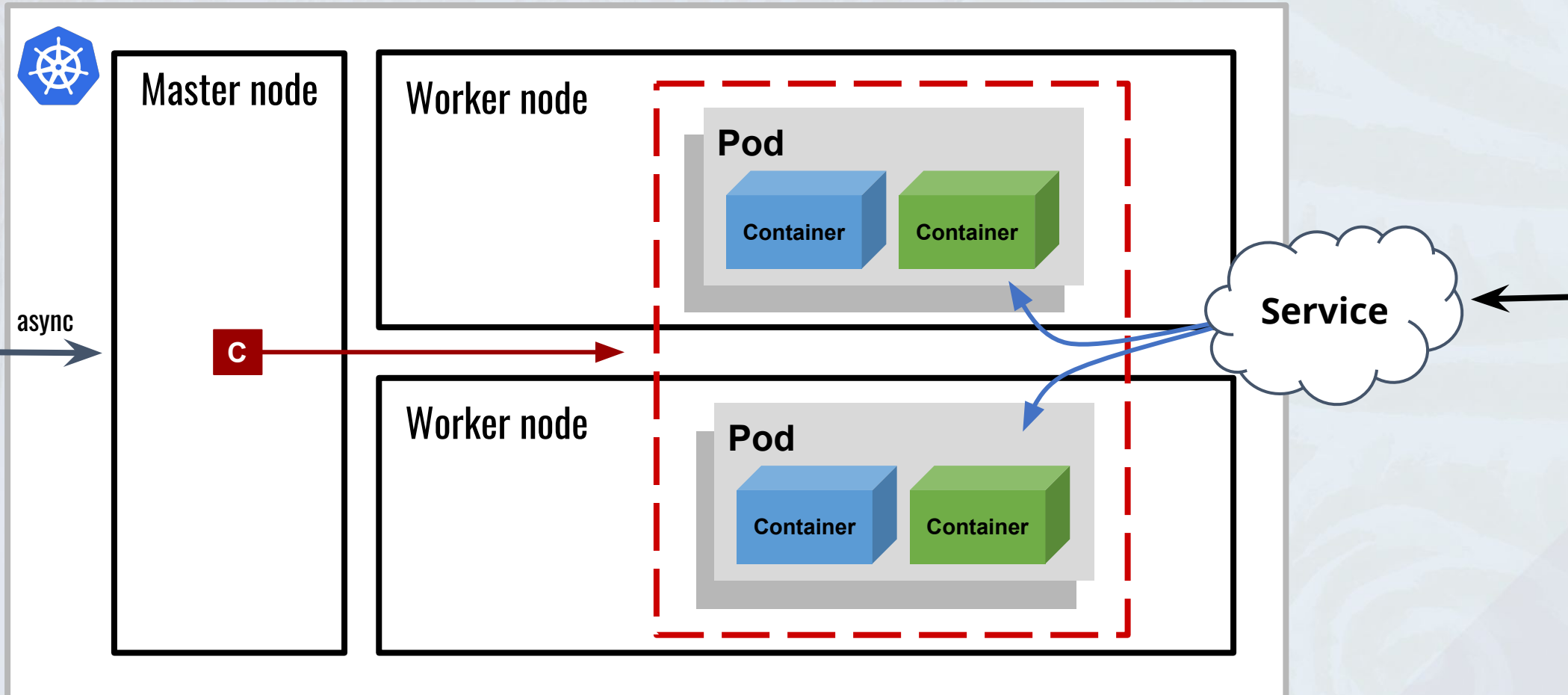




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## Stateful: StatefulSet

- | Consistency
- | *Stable* identity and state
- | *Ordered* deployment, scaling, deletion
- | e.g. Databases, caches, message queues, ...



mongoDB



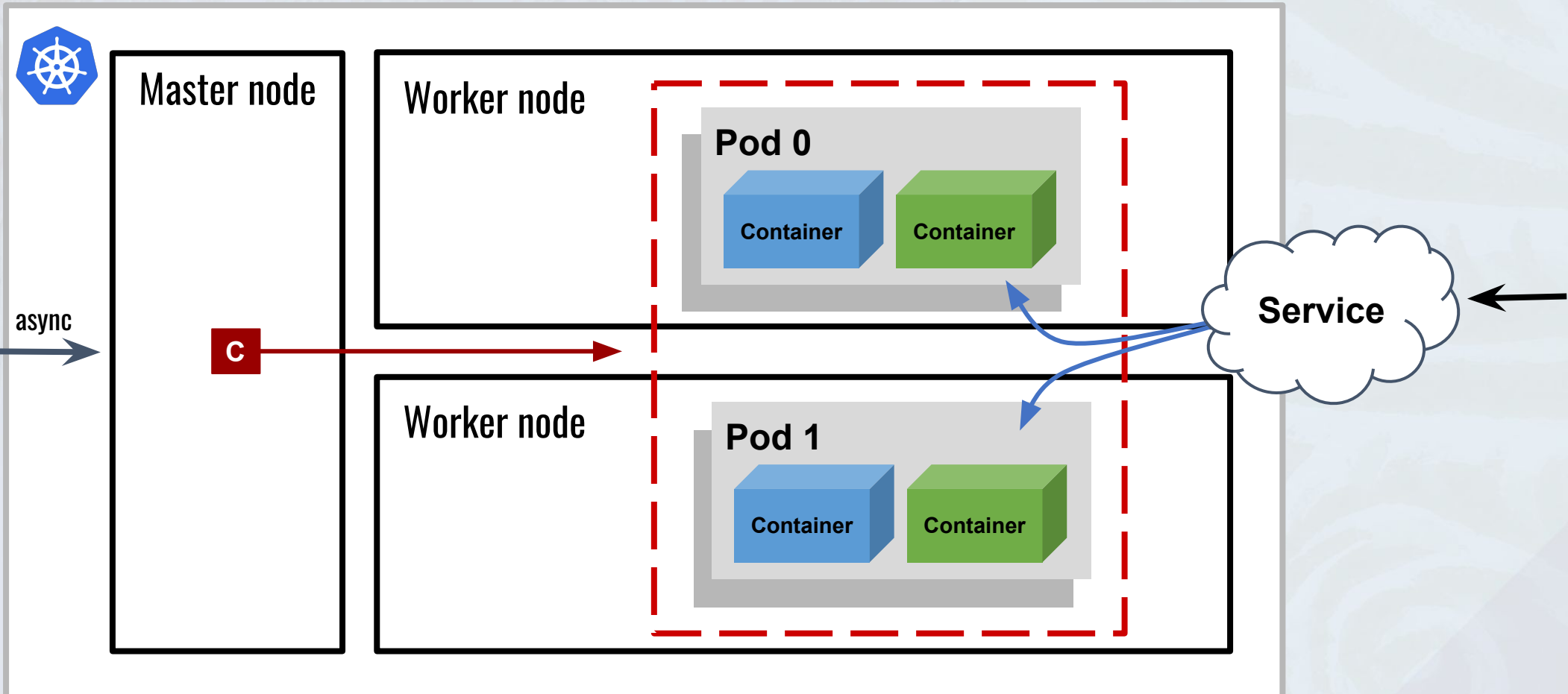
MySQL



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## Daemon: DaemonSet

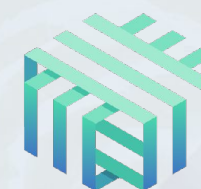
| One per node

| Node labels

| e.g. Logs collection daemon, node monitoring daemon, ...



fluentd

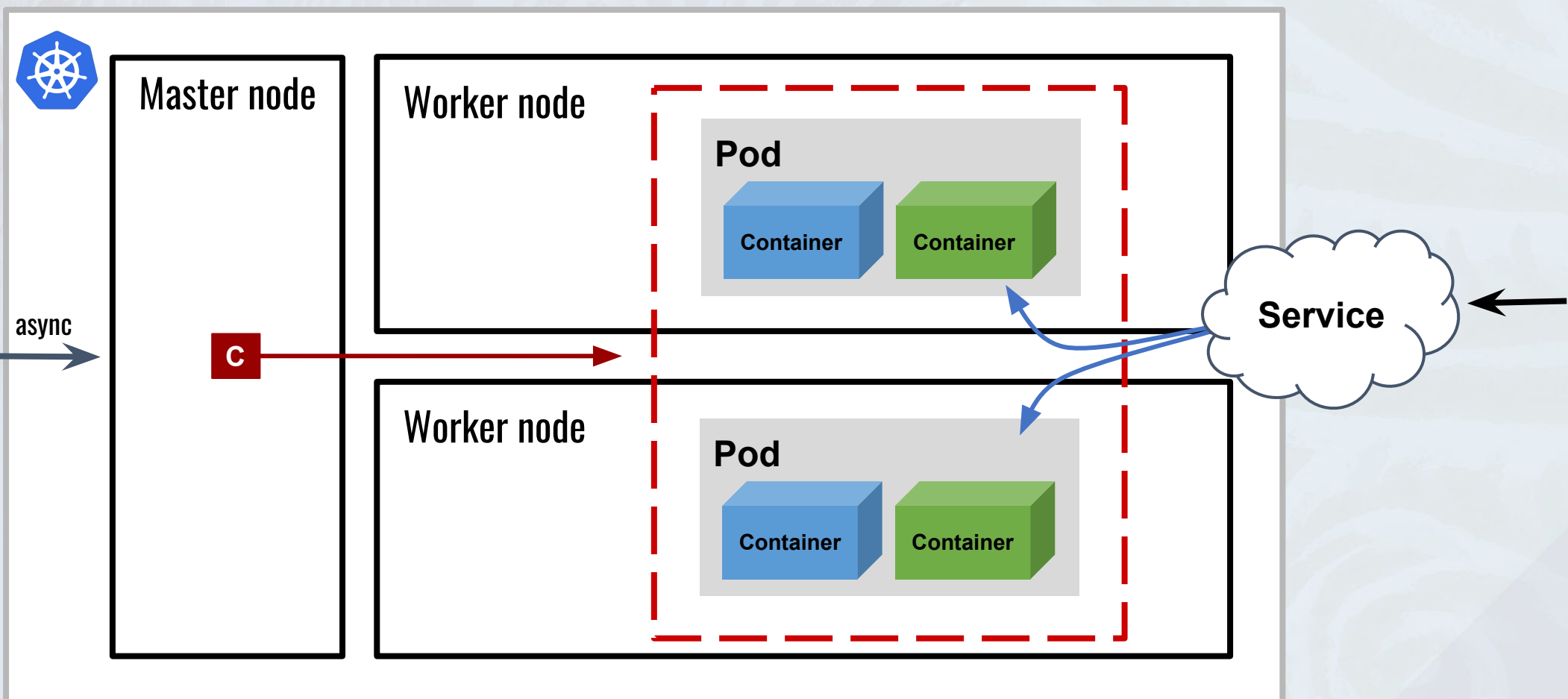




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## Batch: Jobs

| Parallel + Complete

| Related but *independent* work

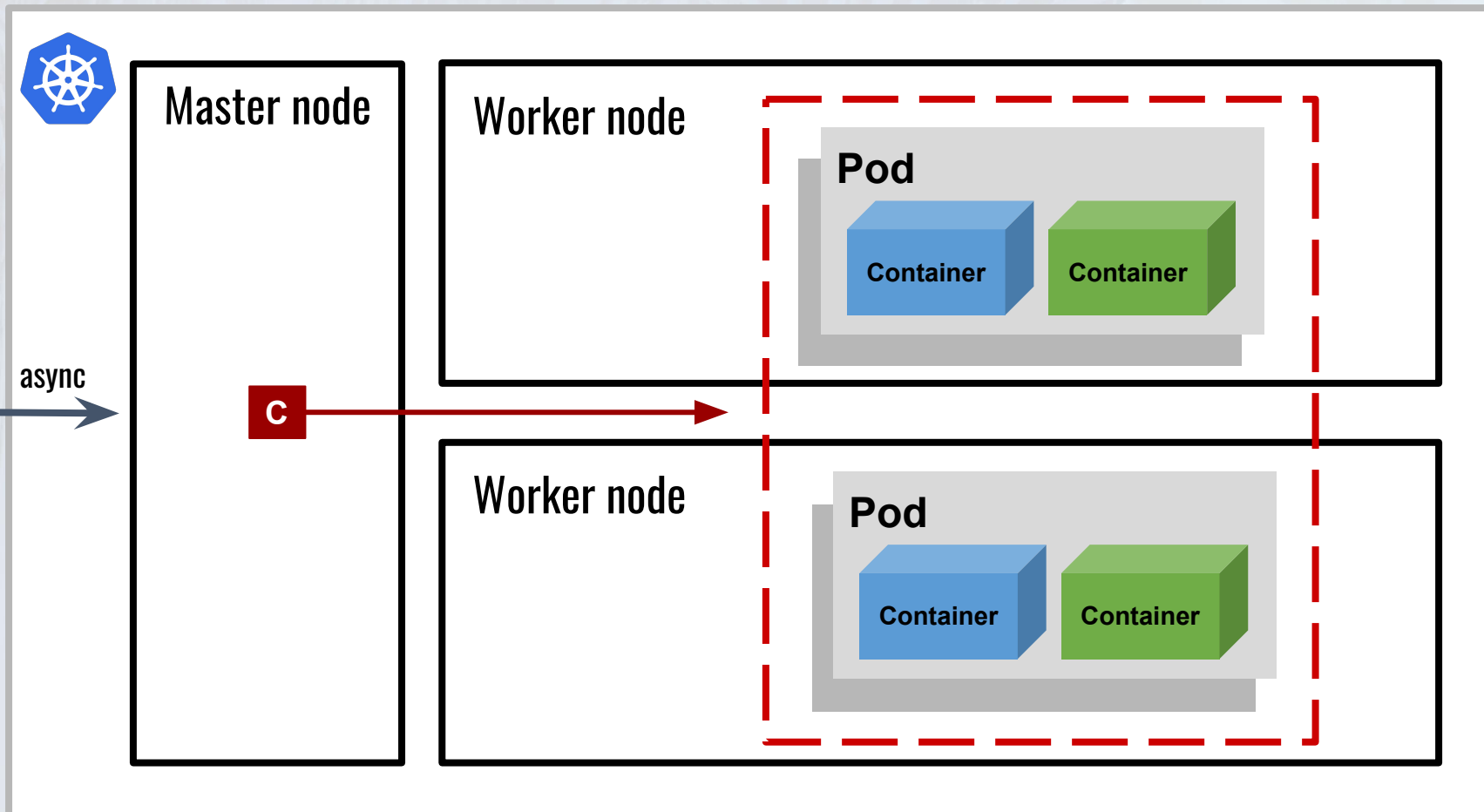
| e.g. Emails to send, frames to render, ...



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## Recap

- | **Stateless:** Deployment; availability
- | **Stateful:** StatefulSet; consistency
- | **Daemon:** DaemonSet; one per node
- | **Batch:** Job; parallel to completion



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## Where do I start?

| **Helm:** The Kubernetes Package Manager  
[github.com/kubernetes/helm](https://github.com/kubernetes/helm)

| **Helm Charts:** Curated applications for Kubernetes  
[github.com/kubernetes/charts](https://github.com/kubernetes/charts)



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## How do I customize?

| Kubernetes is *extensible!*

| Write your own controllers

| e.g. [github.com/upmc-enterprises/elasticsearch-operator](https://github.com/upmc-enterprises/elasticsearch-operator)  
[github.com/coreos/etcd-operator](https://github.com/coreos/etcd-operator)



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# Kubernetes is Open



[github.com/kubernetes/kubernetes](https://github.com/kubernetes/kubernetes)



[kubernetes.io](https://kubernetes.io)



[slack.k8s.io](https://slack.k8s.io) / @janet



@kubernetesio / @janet\_kuo