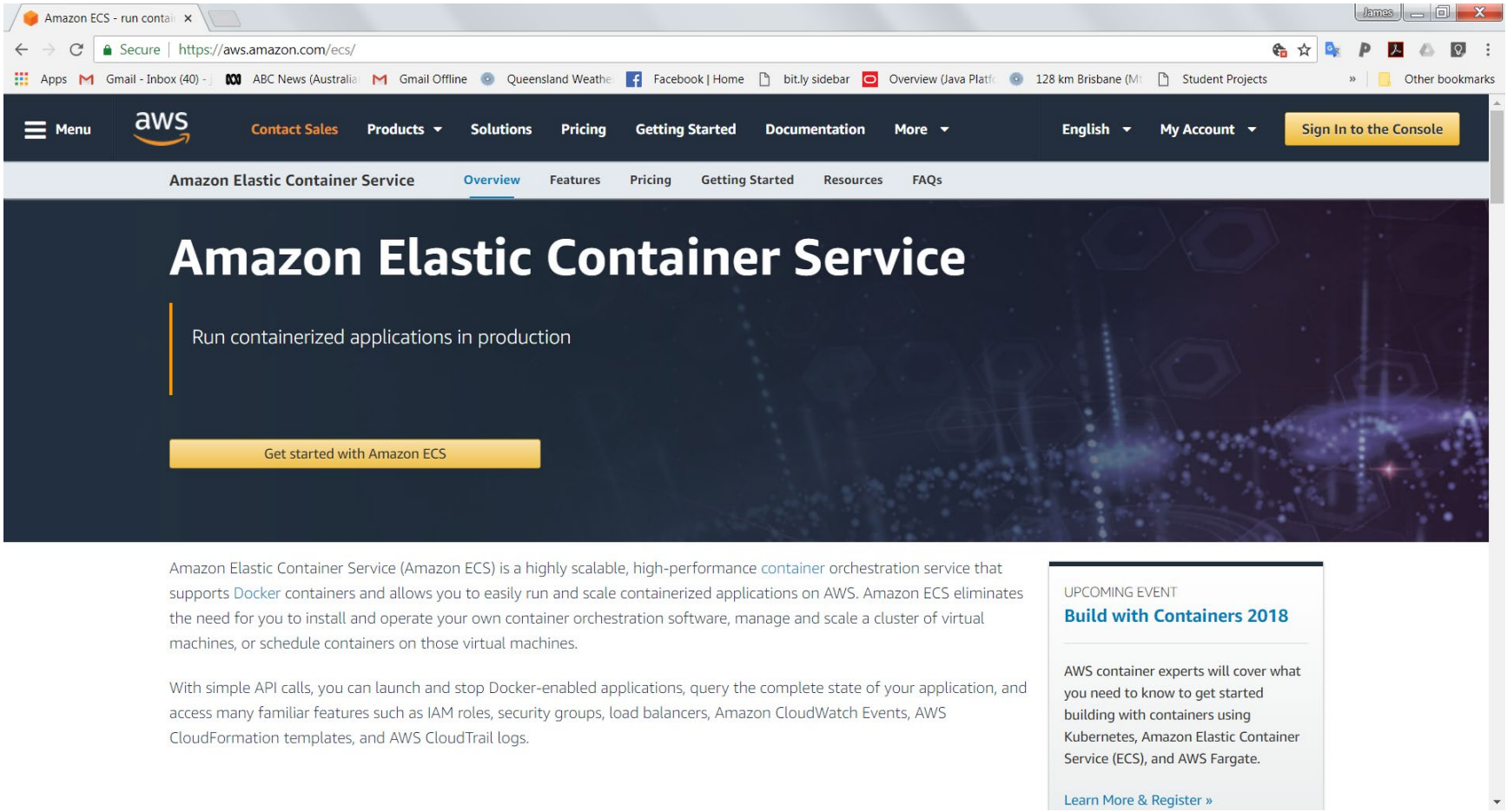
CAB432 Cloud Computing
Lecture 2: Container as a Service

Faculty of Science

CaaS Offerings and Orchestration

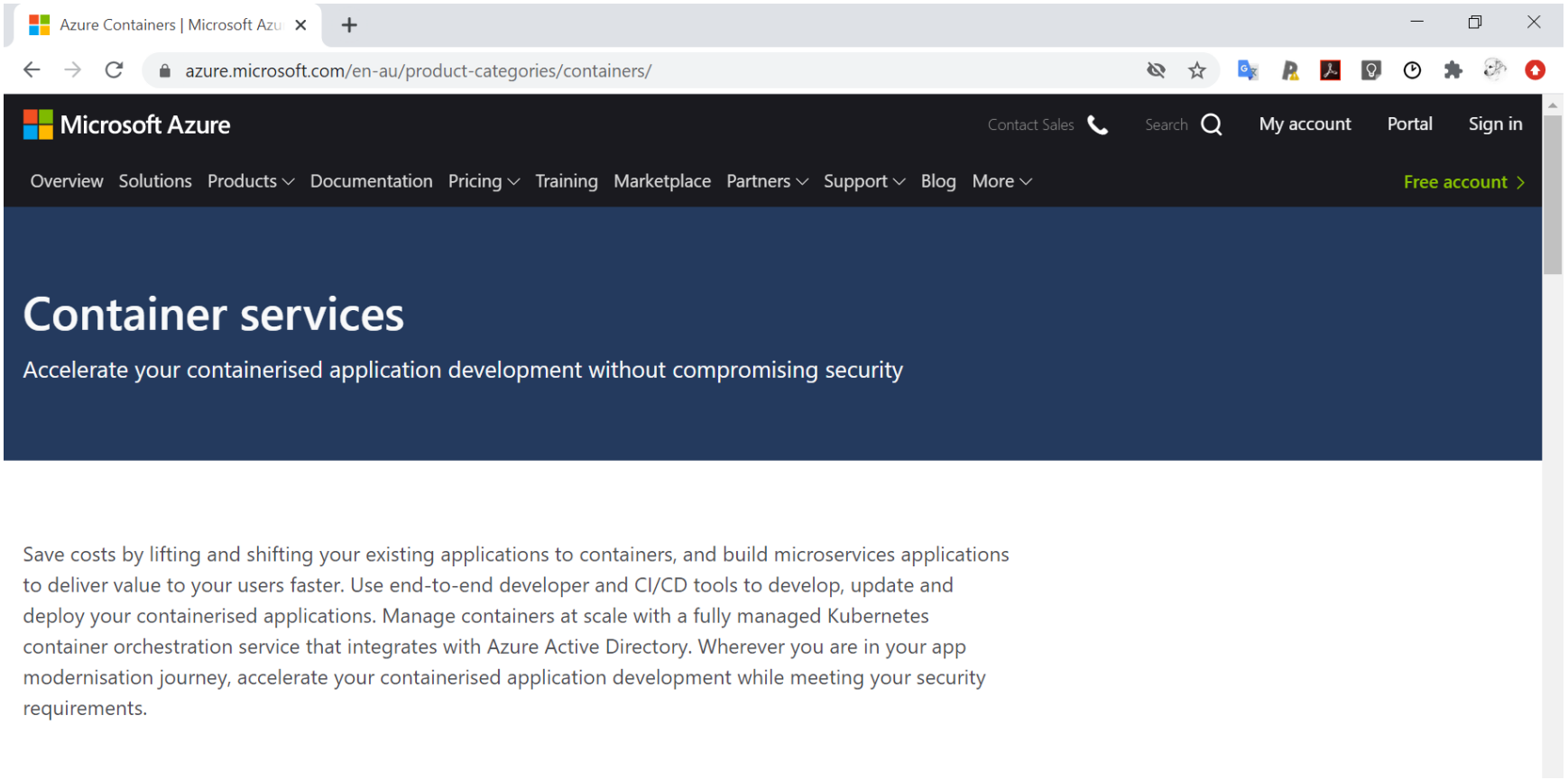
CAAS SERVICES

Amazon EC2 Container Service



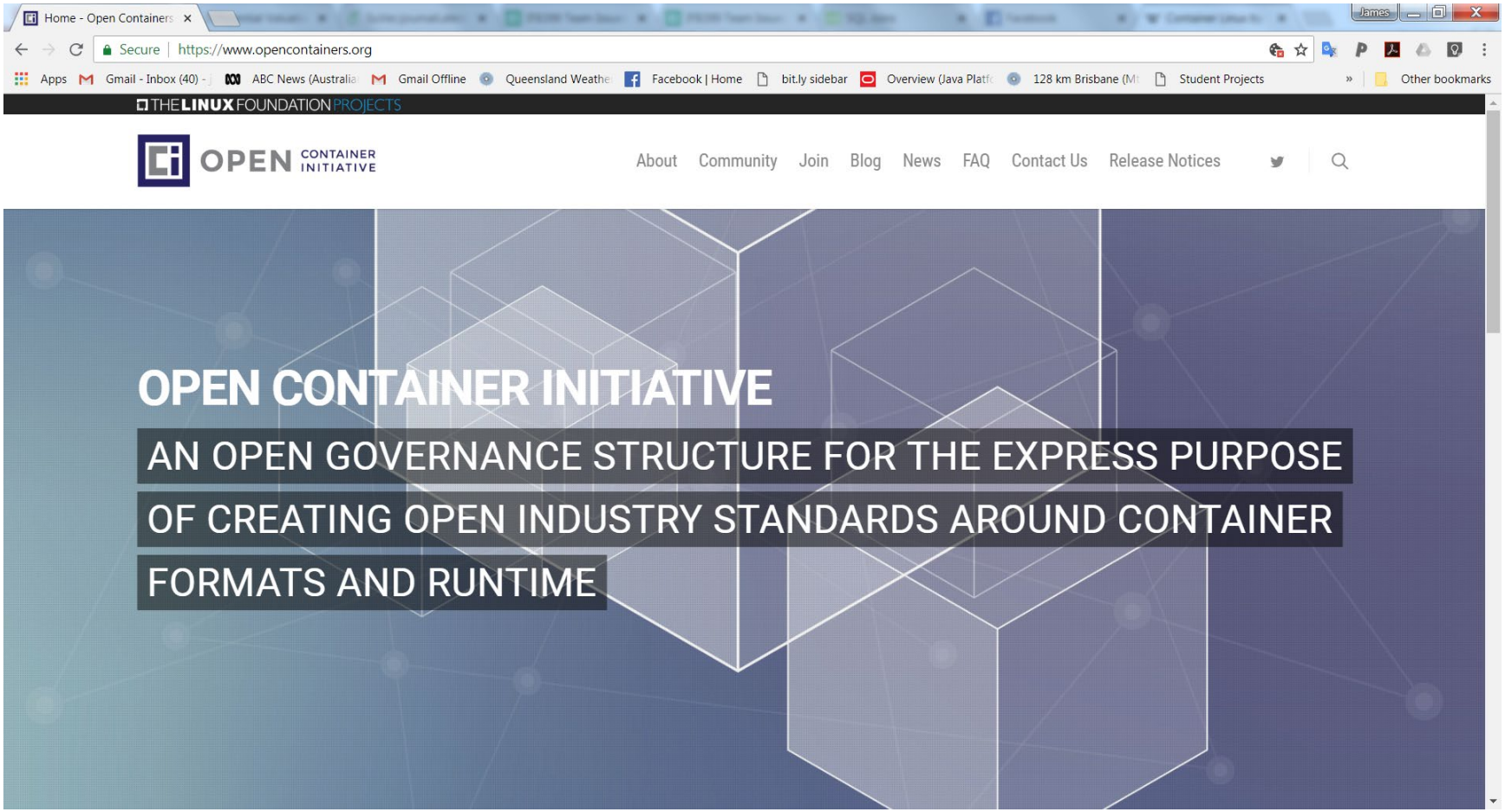
https://aws.amazon.com/ecs/ (2019 Image)

Azure Container Services



https://azure.microsoft.com/en-au/product-categories/containers/

Open Container Initiative



https://www.opencontainers.org/

Members

https://www.opencontainers.org/about/members

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Container Orchestration

- We will discuss these, though others exist:
  - Kubernetes (https://kubernetes.io/)
  - Docker Swarm (https://docs.docker.com/engine/swarm/)

- Both designed to simplify the provision of multiple services to a cluster of servers.
  - “At the end of the day, both tools let you deploy 1 or more services onto a cluster of servers. Then, you can operate on that cluster instead of individual servers”
  - See https://nickjanetakis.com/blog/docker-swarm-vs-kubernetes-which-one-should-you-learn

Final Comments on Docker

- Swarm is Docker specific, built into the CLI.
  - https://docs.docker.com/engine/swarm/swarm-tutorial/
- For swarms, the idea is to deploy from a manager node to multiple worker nodes across a network.
- The docker daemon runs on the worker nodes and will handle the deployment when shared from the manager node.
- Simpler and easier to install than Kubernetes
- But not as a flexible as a container scheduler

Kubernetes

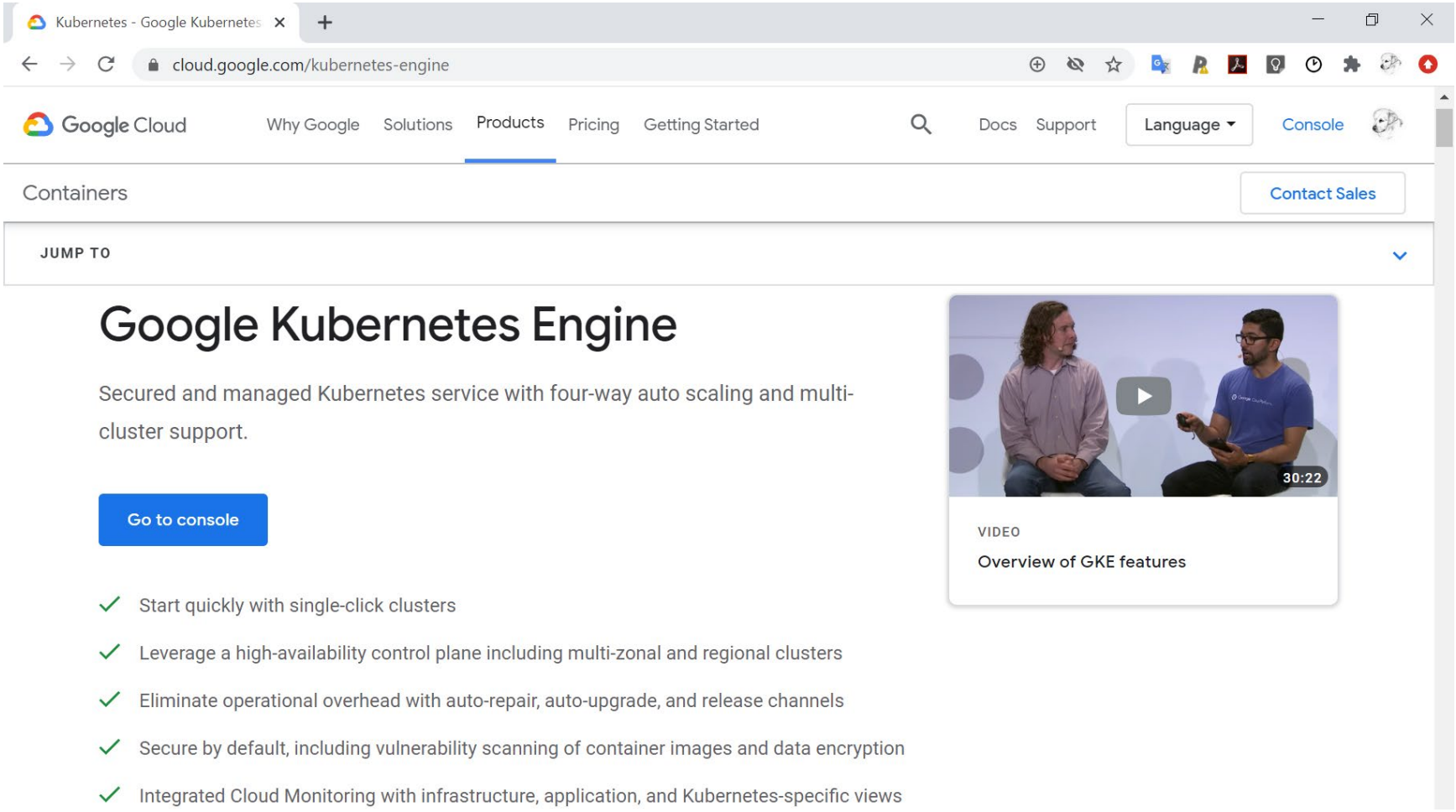
- Initially developed by Google and the open sourced.
  - https://kubernetes.io/
  - https://kubernetes.io/docs/tutorials/kubernetes-basics/cluster-intro/

- Supports Docker and other container images
  - Harder to do easier stuff, easier (able) to do harder stuff

Kubernetes

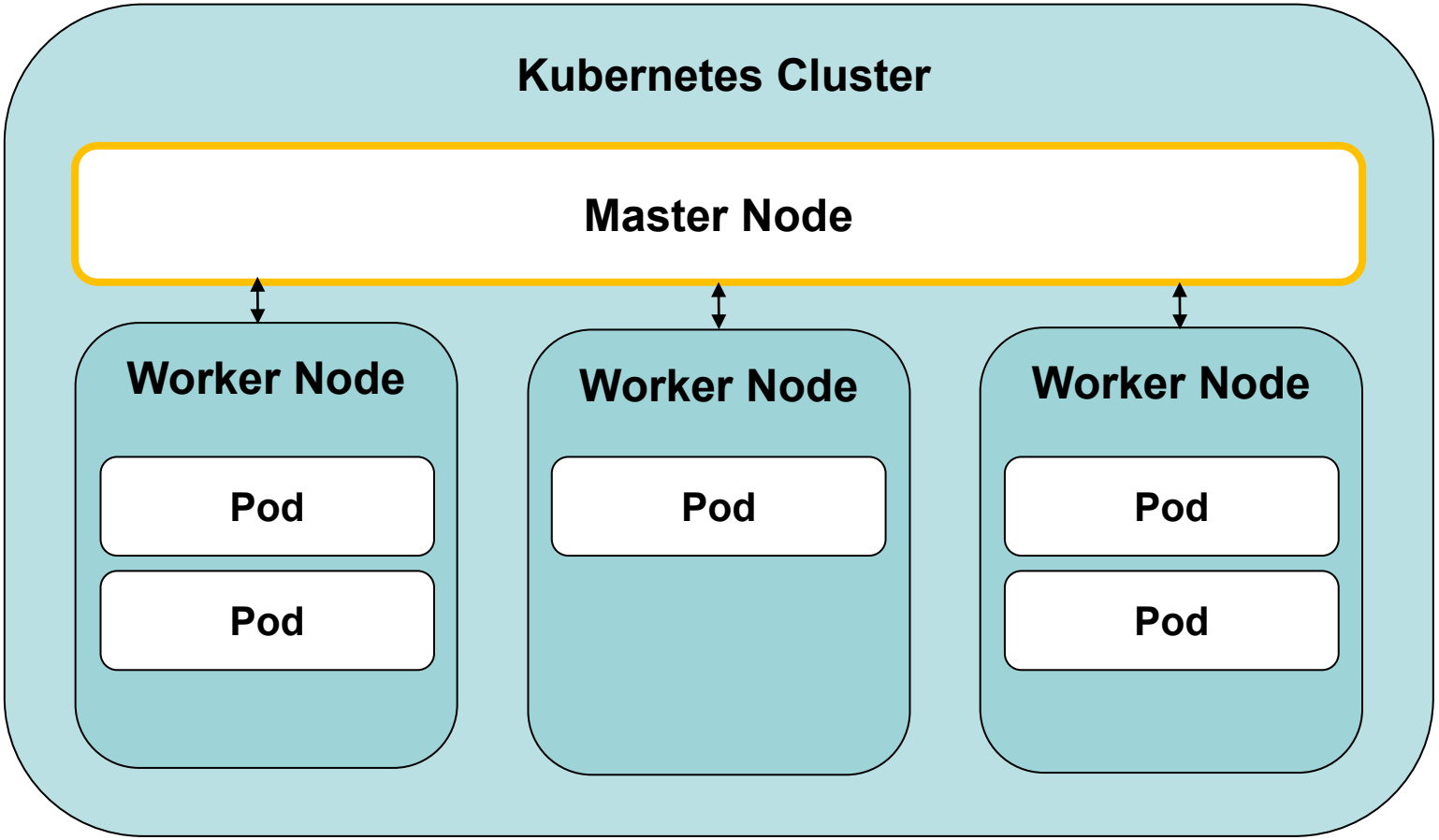
- Managed services from the majors
  - “GCP Kubernetes” https://cloud.google.com/kubernetes-engine
  - “CoreOS + Red Hat” (https://coreos.com/blog/coreos-tech-to-combine-with-red-hat-openshift)
  - AWS Kubernetes Service (https://aws.amazon.com/eks/)
  - Azure Kubernetes Service (https://azure.microsoft.com/en-au/services/kubernetes-service/)

Google

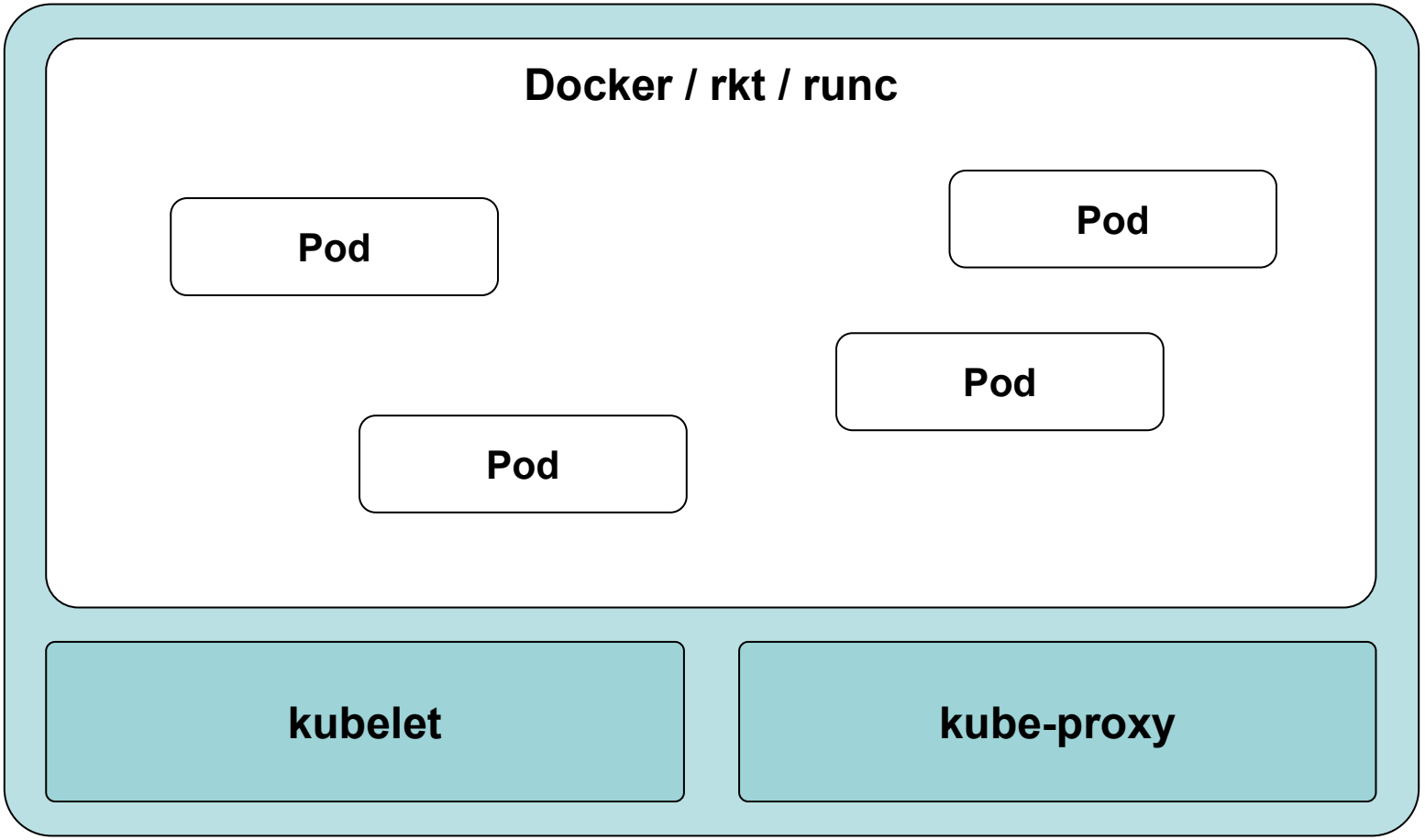


https://cloud.google.com/kubernetes-engine

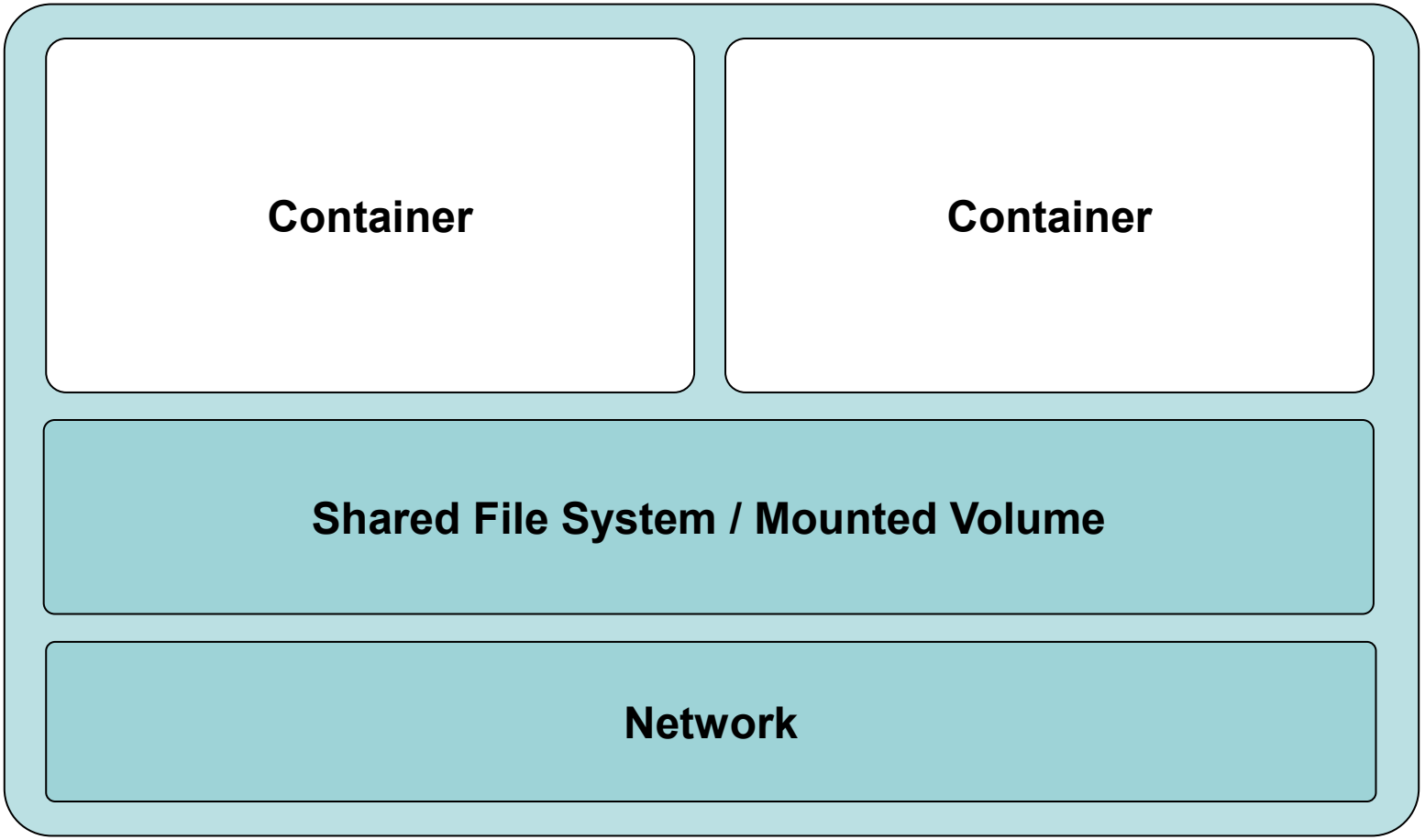
Architecture Visualisation



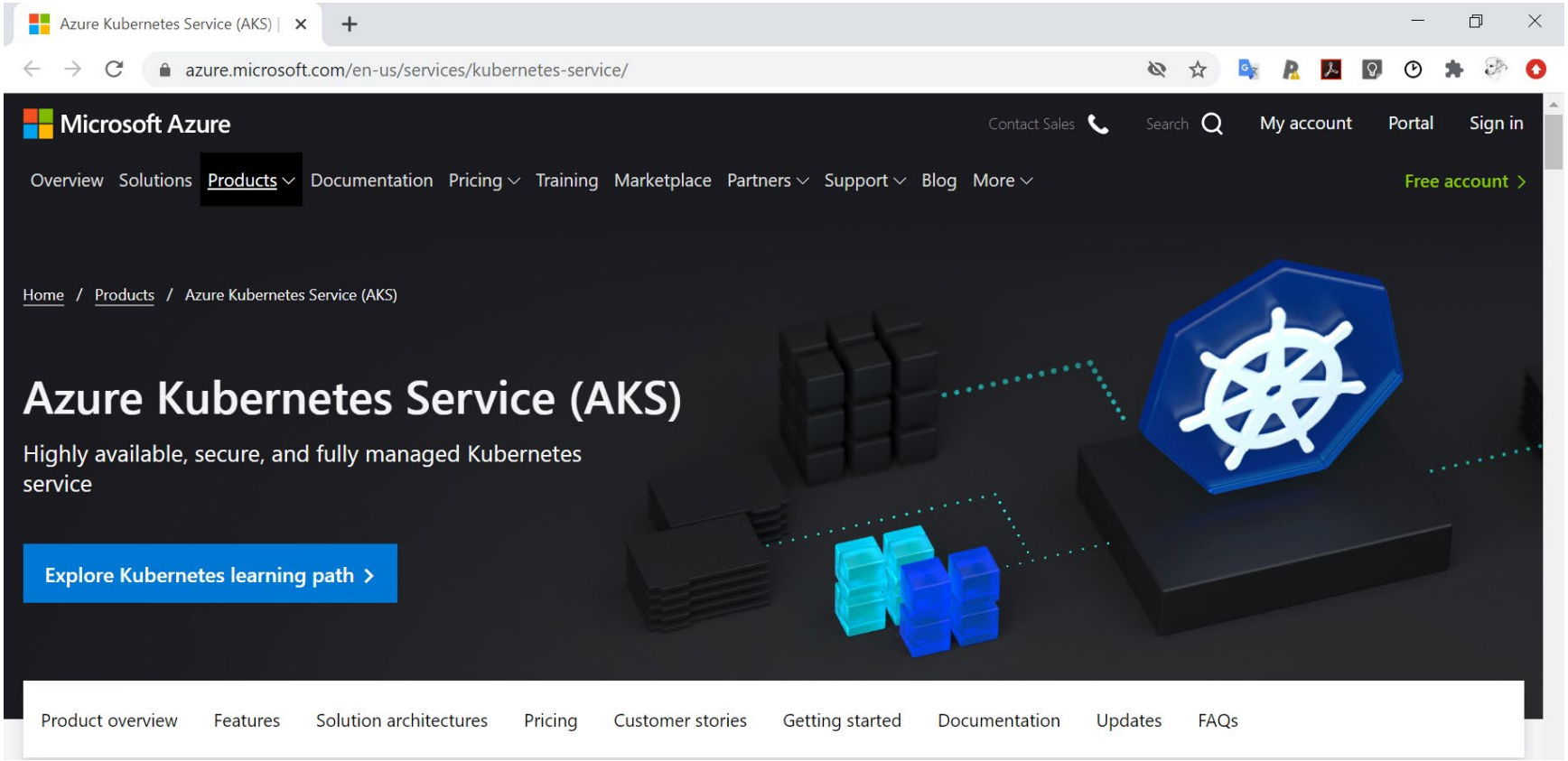
Inside a Worker Node



Inside a Pod


Container
Container
Shared File System / Mounted Volume
Network

Azure Kubernetes Service



https://azure.microsoft.com/en-us/services/kubernetes-service/