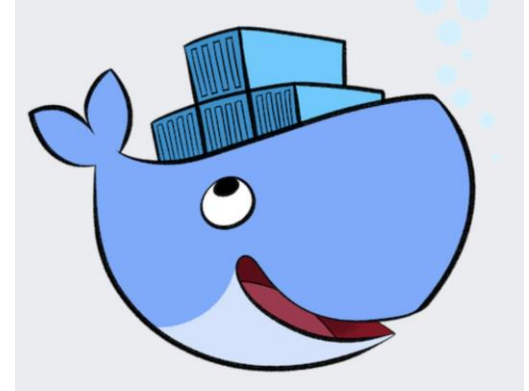# Docker

- **What is Docker**

- **Dockerfiles, images, containers**

- **Examples outside AWS**

- **Examples within AWS**
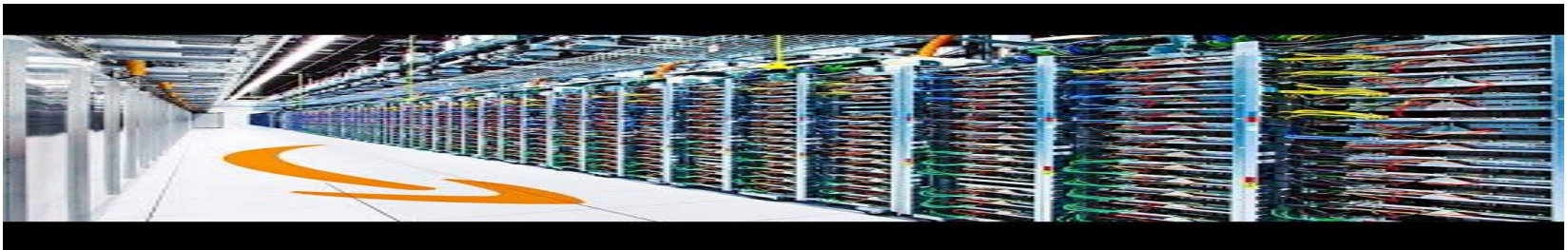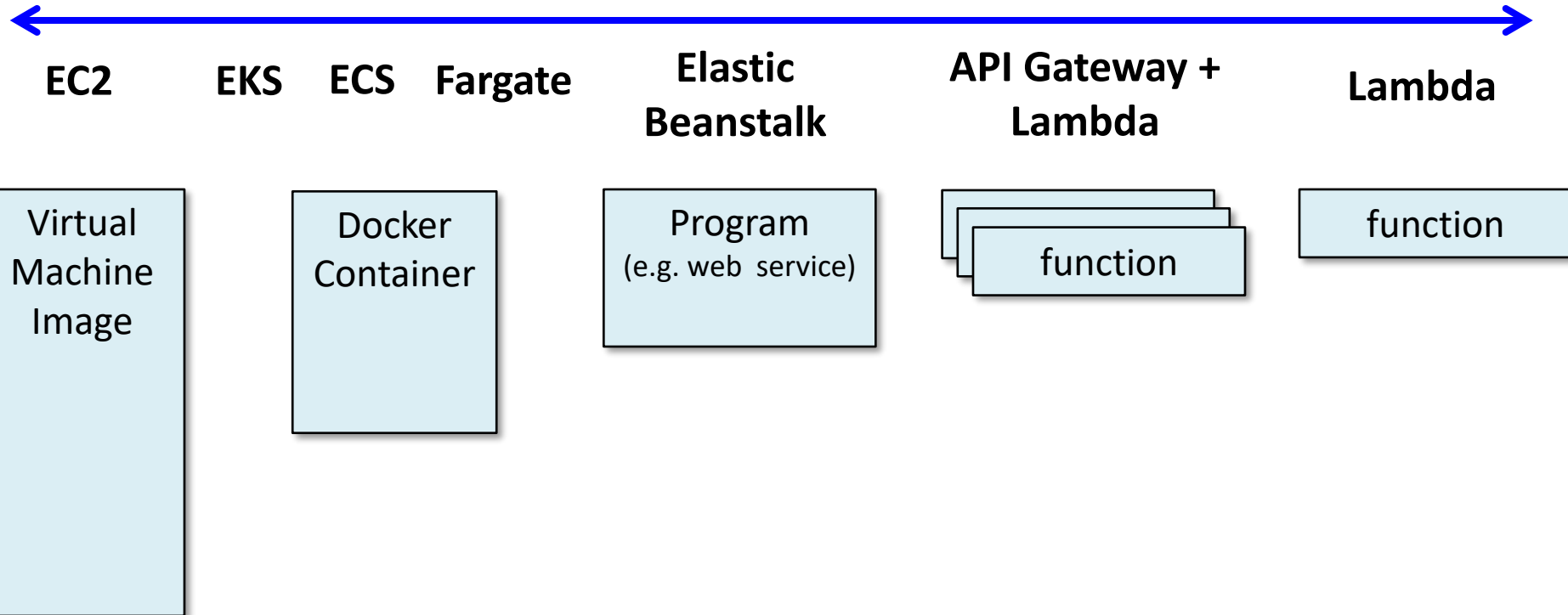
Docker

- ## What is Docker?

  - Docker is an open platform for developing, shipping, and running applications

  - Docker allows you to run software by installing just two things:
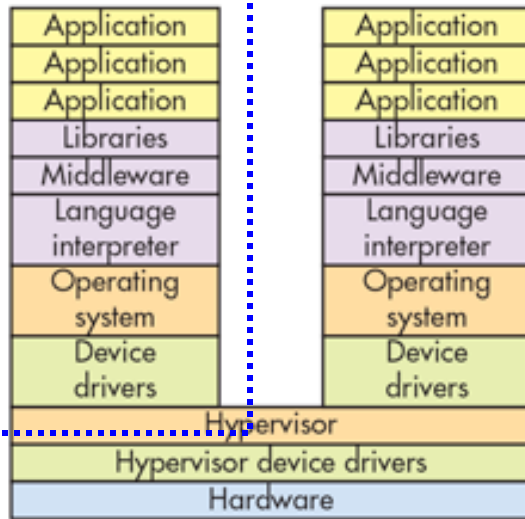
    - Docker desktop
    - Docker image

Software packaging options

EC2   EKS   ECS   Fargate   **Elastic Beanstalk**   **API Gateway + Lambda**   **Lambda**

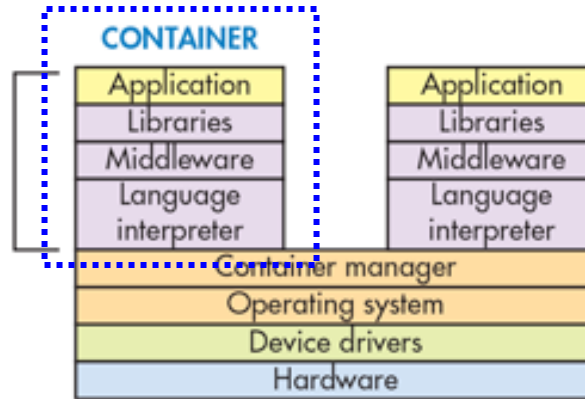| Virtual Machine Image | Docker Container | Program (e.g. web service) | function | function |

Software packaging trade-offs

VIRTUAL MACHINES

✓ Complete control
✓ Consistent environment
✓ HW-enforced separation/security
✗ High space overhead (VM size)
✗ Slow cold start since booting OS (=> slower to scale horizontally)

CONTAINERS

✓ Consistent runtime environment without overhead of a full VM
✓ Smaller in size => faster cold start (=> faster to scale horizontally)
✗ Less configurable than a VM
✗ Less secure? (SW-enforced)
✗ Apps cannot "see" each other, but can "feel" each other (sharing RAM, CPU)
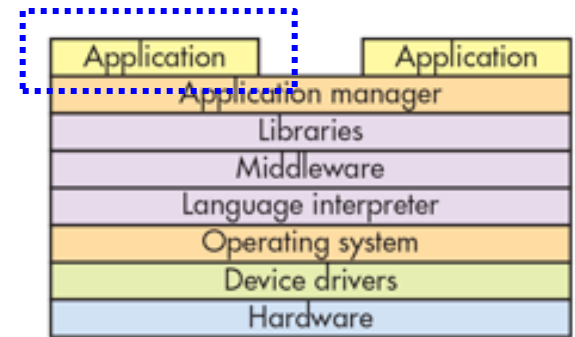
SERVERLESS

✓ Easiest to code and deploy
✓ Automatic scaling
✗ Longer latency (response time)
✗ <15 min