




# MICROSERVICES, CONTAINERS AND MORE

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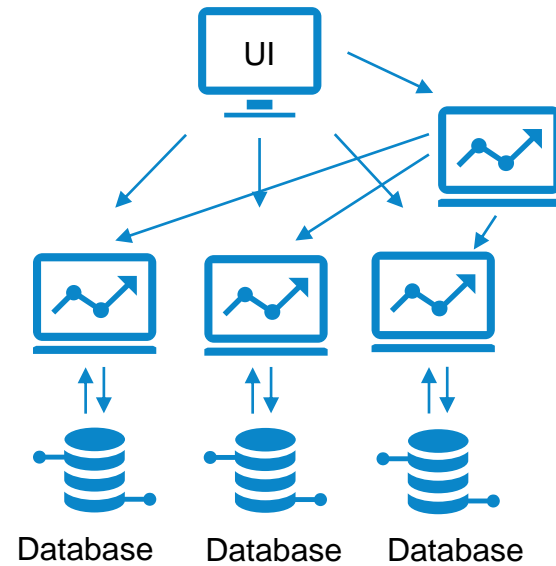


# Agenda

- **Microservices**
- **Containers**
- **Docker**
- **Kubernetes**
- **Service mesh**

# Microservices

- Past – monolithic applications
- Microservices
  - Independent applications
  - Discrete business functions
  - Lightweight
  - Combined to make an application
  - Communicate via HTTP

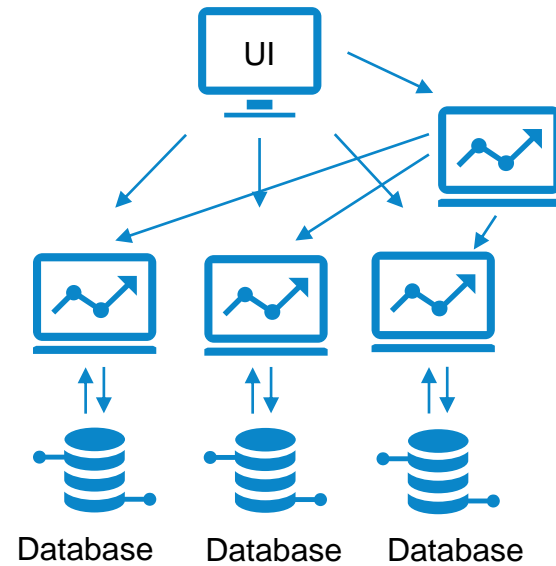


**Key**  
Microservice



# Microservices

- Benefits:
  - Ownership
  - Testing
  - Dynamic scalability
  - Cost savings
  - Speed of deployment
- Disadvantages
  - Complex environment
  - Traceability

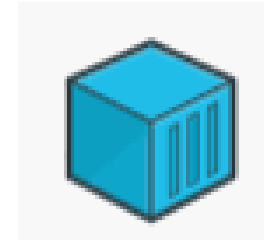


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Microservice



# Containers

- Think of a storage box
- Everything needed for an application
- Reliability and consistency



*Open-source platform used to build, ship, and run containerized applications*

# Docker

- Small application
- Runs the containers that contain applications (typically one application to a container)
- Docker files and docker-compose files
  - Docker-compose defines the image (network, volumes, containers, etc.) – helps you start your application
  - Docker file is the text file with the commands to assemble the image to deploy the container

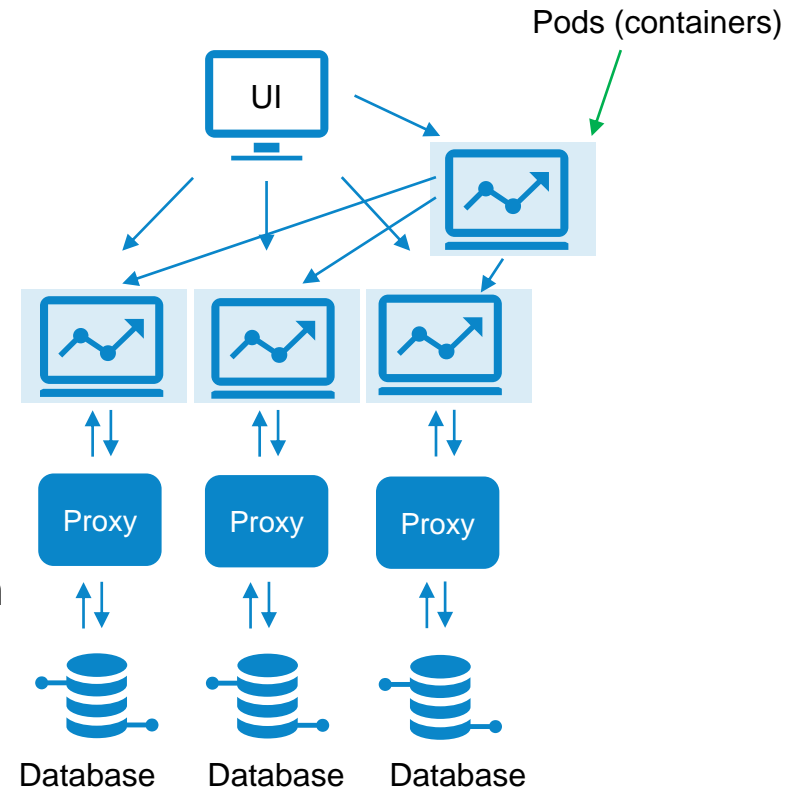
# Kubernetes (K8s)

*Fun fact – K8s is from K – 8 letters- then s*

- Orchestration technology
  - *Orchestration refers to configuring and managing systems and software.*
- Elastic scalability
  - Add or remove containers on the fly
- Start or stop services
- Powerful features
- Terminology
  - Containers are referred to as pods
  - cluster

# Service mesh

- Kubernetes lacks the visibility to networking (communication between pods)
- Service mesh – the set of tools to manage a group of connected services
  - Security
  - Gather metrics
  - Manage network
- Route network traffic through the service mesh
- Istio - a toolset that can manage an application cluster
  - Adds a proxy container for each pod
  - Proxy contains logic and can talk to containers
  - More complexity – but let's keep it simple





## Other third-party tools

- Kibana – View and search log messages
- Jaeger – Review distributed traces
- Grafana – Monitor infrastructure and application health
- ElasticSearch, FluentBit, Prometheus, etc. (let's not overdo it!)

# Questions?

*I am still learning but will do my best.*