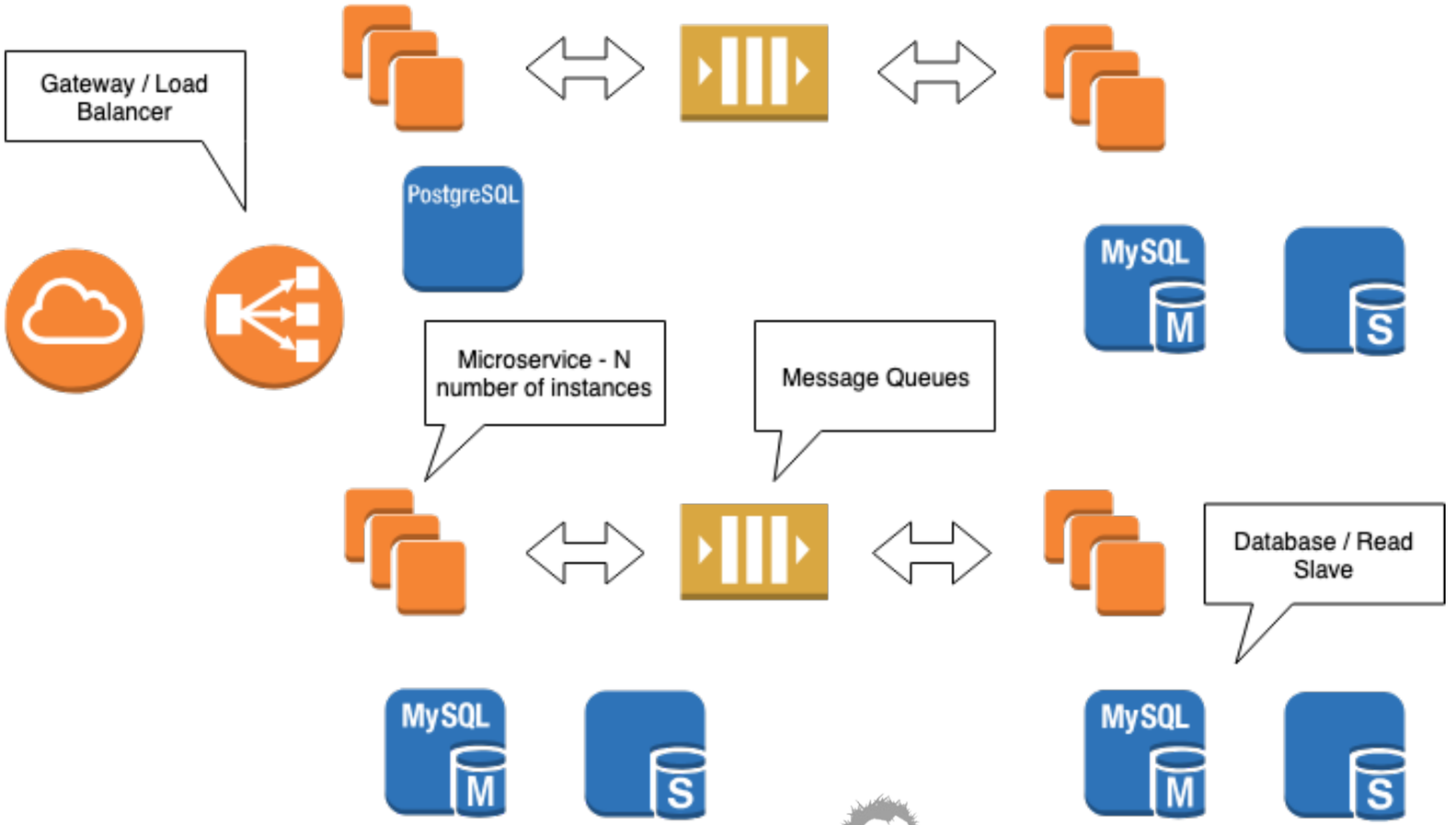
Spring Boot Microservices

Beginner to Guru

Microservice Architecture and Design


Gateway / Load Balancer
PostgreSQL
MySQL
M
S
Microservice - N number of instances
Message Queues
Database / Read Slave
MySQL
M
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MySQL
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S

Gateway

- Endpoint that is exposed to other services
  - Can be internet for public APIs
  - More likely to be internal
- Abstracts implementation of services
- Client calls URL, is unaware of routing taking place to running instance
- Acts as roughly a proxy for network traffic
- Can also act as a load balancer

Service Instances

- Expect to be running N number of services
- Exact number depends on reliability and load requirements
- Minimum might be 3, for high availability
- Some tools allow you to dynamically scale based on load or anticipated load
  - Think Netflix at night
  - In evenings, Netflix traffic is 1/3 of US internet traffic
  - Netflix will scale up and down with load

Database Tier

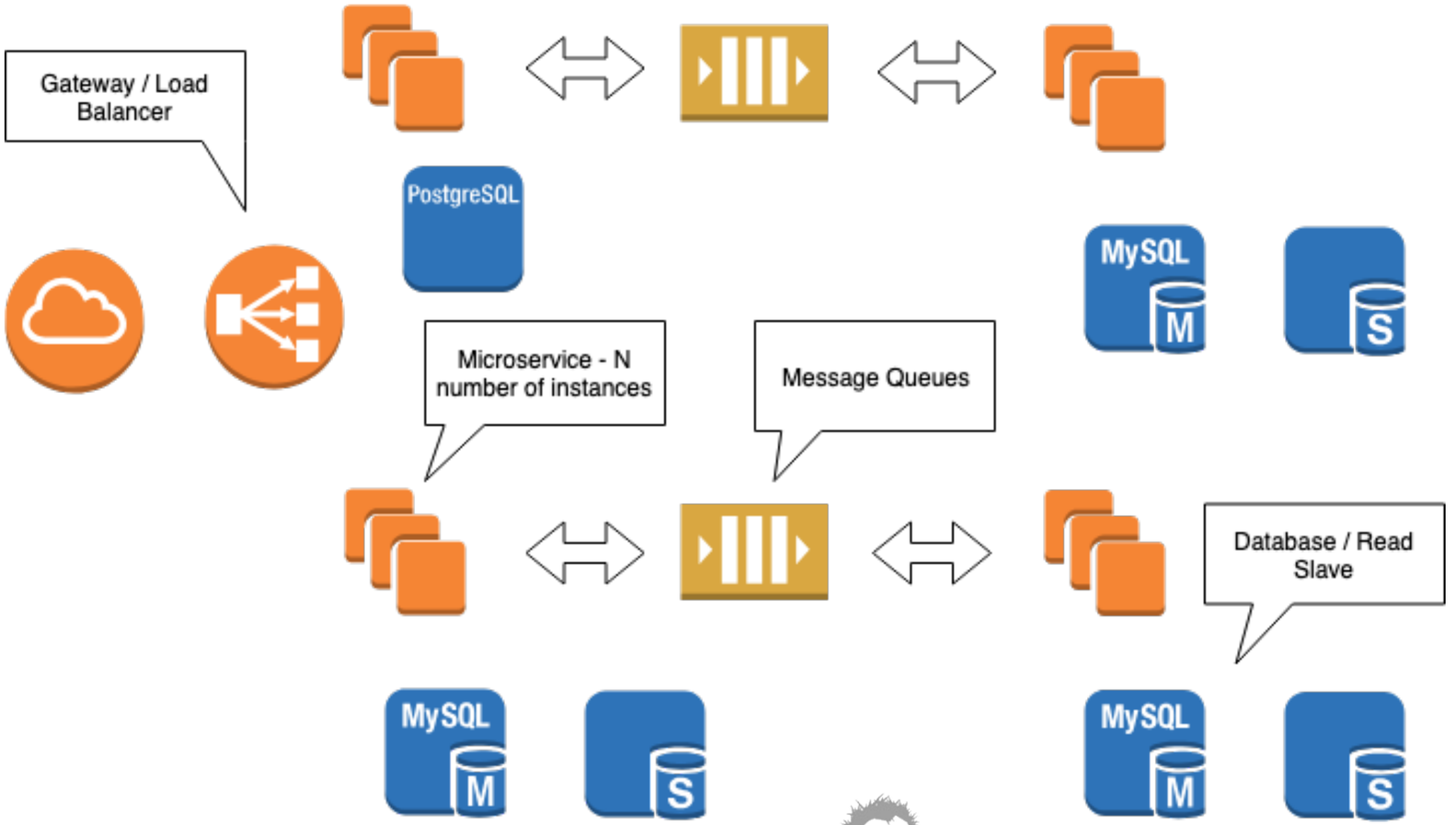
- Typically one database per microservice
  - Guideline - not a hard 'rule'
- Highly scalable services will often have one transactional database
  - And one or more read database (replicas)
- Organizations will often have more than one database technology
- Not uncommon to see mix of SQL and NoSQL database technologies

Messaging

- A common pattern is to expose an API endpoint via a RESTFul API
  - Dependent microservices are often message based
  - Messages follow an event or command pattern
- Messaging allows for decoupling and scalability
- Messaging can be used to define a work flow
  - New Order, Validate Order, Charge Credit Card, Allocate Inventory, Ship Order

Downstream Services

- Often an action on a microservice will invoke actions on multiple down stream services
- For example, it is rumoured a search on Amazon will invoke over 100 services to return the search results - search, sponsors, your history, logging your search, etc
- Placing a new order might invoke the following:
  - Validate Order
  - Pay Credit Card
  - Allocate Inventory
  - Ship Order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SPRING FRAMEWORK

GURU