

Task 1

Data Flow

Master Data Flow(SAP ERP to Jamstack)

Product info: produce id, name, description, price, features, images

Inventory: product stock

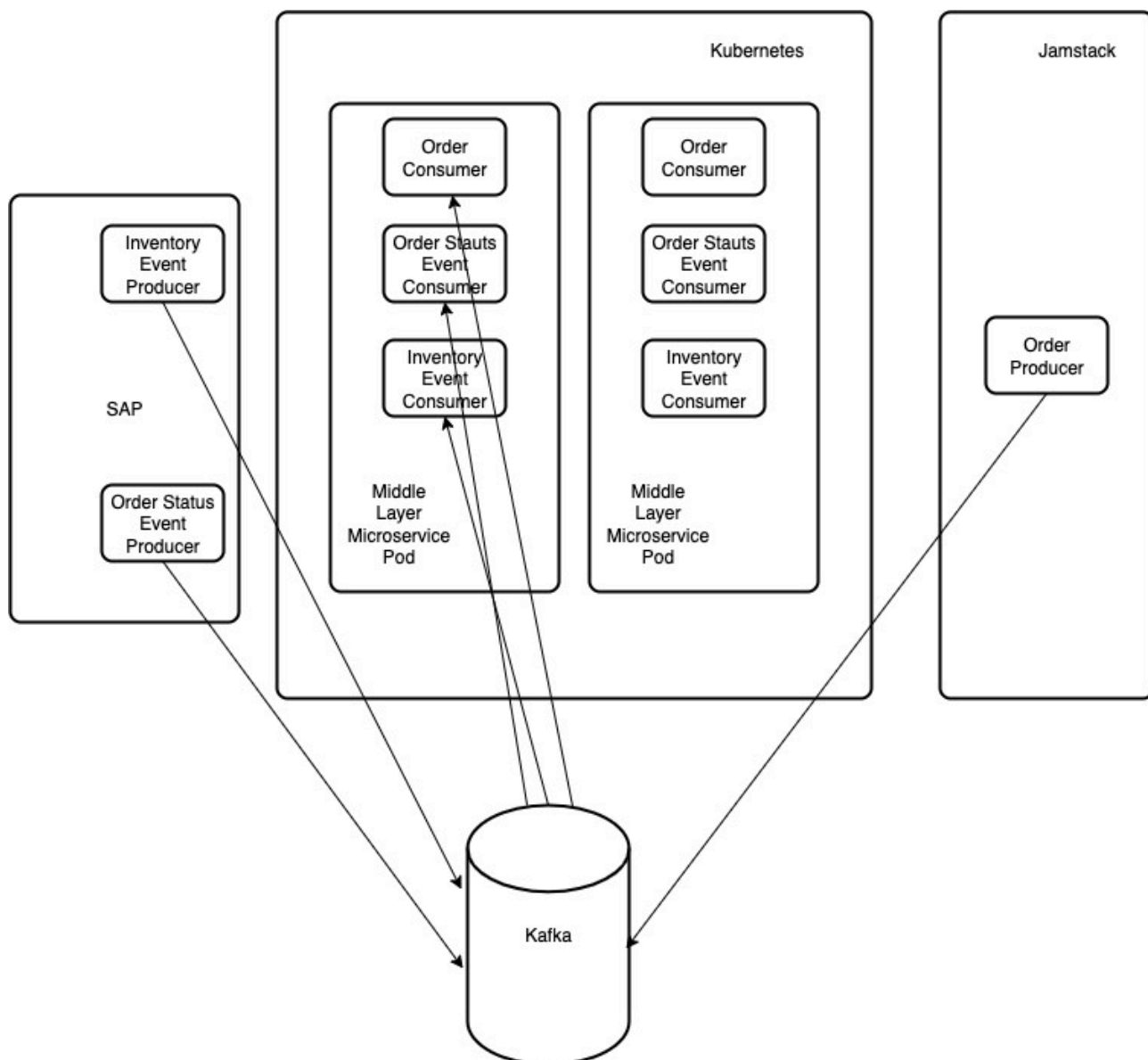
Customer info: name, address, payment

Transaction Data Flow

Order info; Jamstack send order to SAP ERP

Order status update: order processing, shipping, modification, cancellation. SAP ERP send to Jamstack

Integration Layer



Technology

- API Gateway

API Gateway is between Jamstack and Integration layer, it can provide load balancing, rate limit, authentication

- Kubernetes and Docker

Integration layer are developed as Microservice, and containerized with Docker, all the docker instance are deployed and managed by Kubernetes(AWS EKS)

It is easy to scale up or scale down

- Kafka

Process order data, order status change event, inventory change event, there could be 3 topics:
1 Order topic, Jamstack produce order into this topic, integration layer consumes message in this topic and push order data into SAP ERP

2 Order status topic: SAP ERP push order update event into this topic, integration layer consumes the event from this topic and push update to Jamstack

3 Inventory topic: SAP ERP push inventory change event into this topic, integration layer consumes the event and push updated inventory to Jamstack

- MongoDB

Used to save data such as product data, shopping cart data for processing by Jamstack

Security

Authentication/Authorization: OAuth2, use token for authentication and role management

SSL: All REST API endpoints should use HTTPS

Sensitive information: api keys, credentials should be managed by Vault

Governance

Beta, stage, production environment:

Set different environments for different purposes

Canary deployment: deploy new release in a small range of pod

Audit and logging: add audit record for operation, add proper level of logging for debugging or trouble shooting, adding alert for error logging

Test

- Unit test

unit test should be done at coding stage to ensure basic functionality working well

- Integration test

test integration between SAP and integration layer, and also between integration layer and Jamstack

- End to End test

test the system like a normal user

- Performance test

use tools like Locust or Jmeter to add high load to the system to check whether system working well under high load.

Logging:

Centralized logging: use ELK to manage logging

Deployment approach

CI/CD pipeline(jenkins, gitlab, bitbucket) for build test and deployment

Blue/Green deployment: two identical environments, always has one as active, when deployment new release, deploy to inactive then do load balancer switch, if there is issue with new release, rollback to old one.