7 Important aspects of Microservices

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Talks about #java, #spring, #developer, #technology, and #webdevelopment

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1. Microservices

What are they ?

Microservices are services built small enough so that their entire lifecycle can be owned and managed by a small team.

2. Service Discovery

What is it ?

A mechanism of how microservices can locate each other over network.

Example

If Microservice A wants to call microservice B:
It will use service discovery mechanism to fetch IP address and port of B and then call B.

Implementations

ZooKeeper, Consul, etcd, Eureka

3. External Configuration

What is it ?

External configuration enables following:

- Enable services to run on various environments without a code modification inside the service.
- Enable different configuration values for those services for different environments.
- Dynamically change configurations without changing application code or restart/redeploy application.

3. External Configuration (contd.)

Example

DB credentials and other details, application properties, environment variables for Dev, QA and Prod env.

Implementations

Consul, Spring cloud (enables various datastores to store needed configs)

4. API gateway

What is it ?

It provides a way for clients to access microservices. It can provide security, load balancing , rate limiting etc.

Example

Enables clients to retrieve data from multiple services with a single round-trip call to API gateway.

Implementations

NGINX, AWS API gateway

5. Circuit breaker

What is it ?

It protects cascading failures of services, when just a few services are affected.

Example

If service A calls B, but response from B is very slow. This will quickly result in calls from A to B getting piled up. Thus threads of A will be blocked causing issues to service A due to issue in B.

For this, A should call B using a circuit breaker.

Circuit breaker will fail the slow requests and prevent A from calling B for certain time thus protecting A.

5. Circuit Breaker (contd.)

Implementations

Hystrix, Resilience4j

6. Distributed tracing

What is it ?

Enables to trace a request passing through various microservices.

Example

A request that passed through 5 microservices is responding slowly. Using tracing, you can see the request execution times and narrow down on the service that is causing the request slowness.

Tools

Zipkin, Jaegar, AWS X-Ray

7. Centralized logging

What is it ?

It is aggregation of logs from individual microservices in a central location for easier access and analysis.

Example

Error occurs for a request passing through 10 microservices. Track the request flow from a single logging platform to find out and analyze the cause.

Implementations

Splunk, Elastic

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