Foundation of Internet Platform Development & Operation

Project

2019-11-26

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Objectives

- Container
  - How to build a container image
  - Operations

Objectives

- Kubernetes
  - Architecture
  - Deployment, Pod, Service
  - Features*
  - Scheduling*

Objectives

- Monitoring & Tracing
  - Collector
    - Logs
    - Metrics
  - Visualization

Objectives

- Architecture
  - Distributed
  - Load balance
  - Fault failure

Objectives

- Problem solving
  - Tinyurl
    - Scalable
    - Performance
    - Evaluation

Requirements

- Requirement I
  - Prepare a CI/CD environment
    - Deliverables
      - Markdown
      - Demo
  - Tinyurl application
    - Application
      - Front-end
      - Back-end
      - Database
    - Deliverables
      - Demo
      - Markdown
  - Automatically build images after a PR

Requirements

- Requirement I
  - Prepare a Kubernetes environment
    - Mode
      - Cluster
    - Features
      - DNS
      - Dashboard
    - Migrate your CI/CD to Kubernetes
  - Deliverables
    - Demo
    - Markdown

Requirements

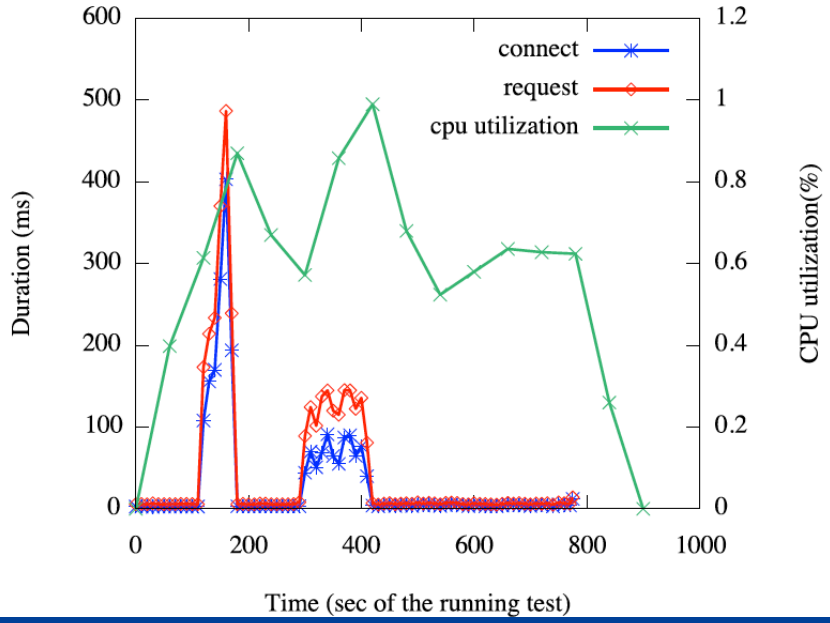
- Requirement II
  - Make your application distributed
    - Features
      - ?
    - Deliverables
      - Demo
      - Deployment yaml
      - Markdown

Requirements

- Requirement III
  - Load Balance
  - Autoscaling
  - Evaluation
    - RPS
    - Response time

Requirements

- Requirement V
  - Autoscaling
  - Experiment
    - The response time of autoscaling
  - Deliverables
    - Demo
    - Experiment Report in Markdown



Requirements

- EC2
  - m5d.xlarge

Submission

- Deadline
  - Before Jan 7, 2020
  - GitHub
- Presentation
  - Before Jan 10, 2020

System Design

- https://github.com/donnemartin/system-design-primer

Quiz

- How to find a string in a huge dataset?
  - Clarification
    - Data
      - What is the data
        - characteristics
      - How big
      - How to get
      - Sharding/Partitioning
    - Infrastructure
      - Memory
      - Storage
      - Network
    - Scenario
      - RPS
      - Latency

Quiz

- Let's say that you have 10 systems in an infrastructure. One of them provides the list of all customers, while another provides the list of all orders. You want to keep the systems as decoupled as possible but they need to share data in real time. What mechanisms do you put in place to keep the systems independent, yet fully integrated? Describe the steps you would follow to replace the system that holds orders.

Quiz

- The Charlie system gets an hourly feed of data from another system called "Bravo."
- The Bravo system is scheduled to be replaced by an altogether new system called "Romeo" that will organize the data in a completely different way. Unfortunately, this will radically affect the data feed from Bravo to Charlie.
- Not only will it vanish, but any feed from Romeo will be structured and organized in a completely different manner than it was before.
- How to develop a roadmap to allow this change to occur. ?