



# Big Data Analytics on Container-Orchestrated Systems

Gerard Casas Saez

University of Colorado Boulder

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# Outline

Introduction

Background

Problem statement

Approach

Implementation

Questions?

Why?

Keeping up with data growth

# Problem

- IOT & Social networks
- Internet traffic
  - Current: 72 petabytes/month
  - Prediction 2021: 232 petabytes/month.



# Another problem

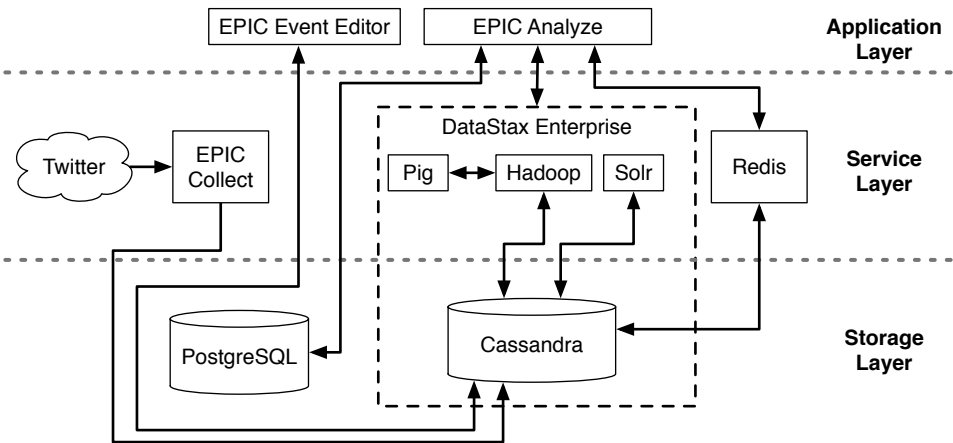
- Need to scale Big Data Analytics System
- Keeping maintenance at low cost
- Container-orchestrated make infrastructure easier
- Migrate Project EPIC architecture to container-orchestration system

# Background

# Project EPIC

- EPIC Collect
- EPIC Analyze





# Containerization

- Operating-system-level virtualization
- Use host machine system resources
- **Docker** most used alternative
- Development microservices

# Container-orchestration systems

- Container interaction abstraction
- Great to deploy microservices architectures
- Apache Mesos vs **Kubernetes**



# Microservices Architecture

- Small & specific
- Better scalability
- Loosely-coupled & highly-cohesive
- Orchestration <> **Coreography**

# Coreography microservice architecture

- Easier to extend
- PubSub interaction
- Messaging system: **Apache Kafka**
- Asynchronous



# Problem statement

# Problem statement

1. Advantages and/or limitations from existing infrastructure
  - 1.1 More reliable?
  - 1.2 More scalable?
2. Lower maintenance costs than the existing infrastructure?
  - 2.1 Easier to deploy?
  - 2.2 Easier to upgrade?
  - 2.3 More resilient to failures?

# Approach

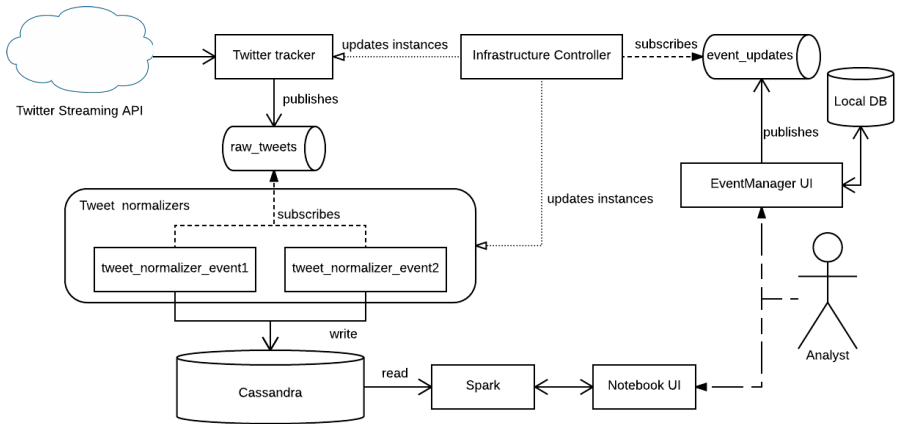


# Features

- Event management
- Real-time collection of streaming Twitter data
- Real-time classification of incoming tweets
- Data Analysis

# Non-functional requirements

- Less code
- Easier deployment
- More flexible
- Better scalability



Demo time!

# Let's track an event...

Event Manager UI

...and analyze it!

Zeppelin Notebook

Questions?