Cloud Computing Applications and Services

(Aplicações e Serviços de Computação em Nuvem)

Guide 4: Monitoring

University of Minho

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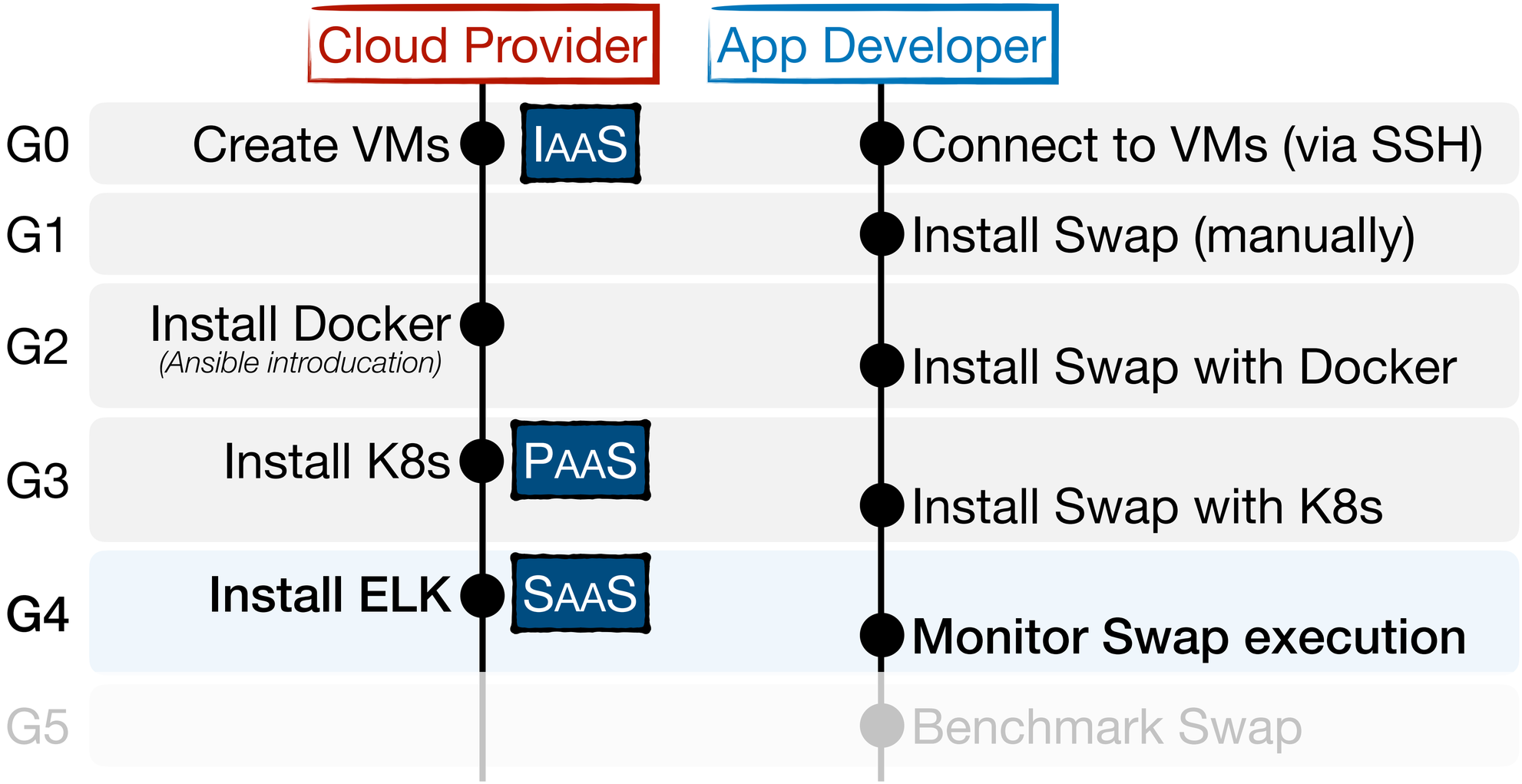
Context

- In Guide 3, you used Kubernetes and Ansible to automate the deployment and configuration of a distributed Swap deployment.
- Now, what if you want to track the performance of your Swap deployment, along with the health of the cluster where swap is deployed on?
- To address these challenges, you need to resort to **monitoring frameworks**.

Road Map

Where are you on the roadmap?



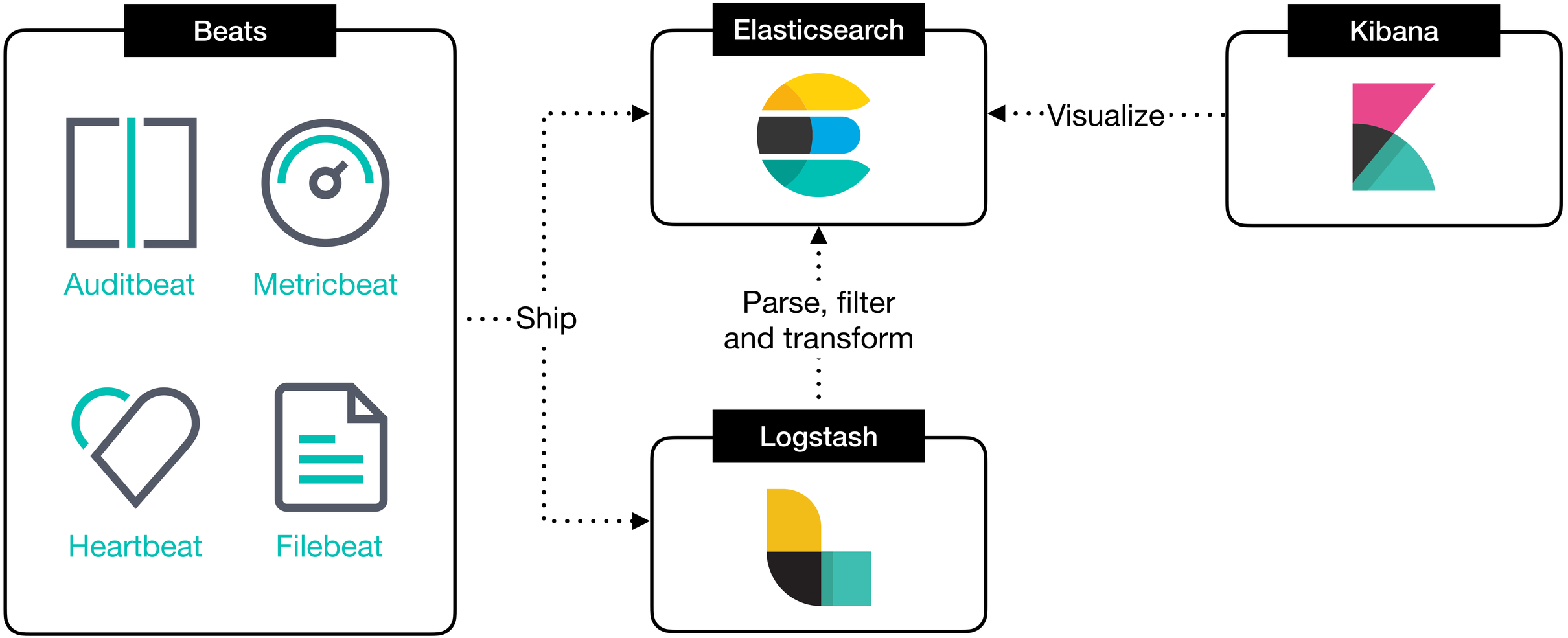
Goal

- In this Guide, you will use **Elastic Stack** to **monitor** the Swap application and the resource usage (e.g., CPU, RAM, I/O) at the cluster where your application is deployed.

elastic stack

Elastic Stack is a suite of open-source products from Elastic designed to ingest, search, analyze, and visualize data from any source and format in real time.

Elastic Stack



Elastic Stack

- **Beats:** lightweight data shippers (Observation and Collection)
  - *Purpose: t*o observe, collect and send data to Logstash or Elasticsearch for further processing and indexing.
- **Logstash:** a data ingestion tool (Collection)
  - *Purpose:* to collect, transform, and send data from various sources to Elasticsearch.
- **Elasticsearch:** a distributed, JSON-based search and analytics engine (Analysis)
  - *Purpose:* to index, search, and analyze data.
- **Kibana:** a data visualization and exploration tool (Presentation)
  - *Purpose:* to visualize and manage data from Elasticsearch.

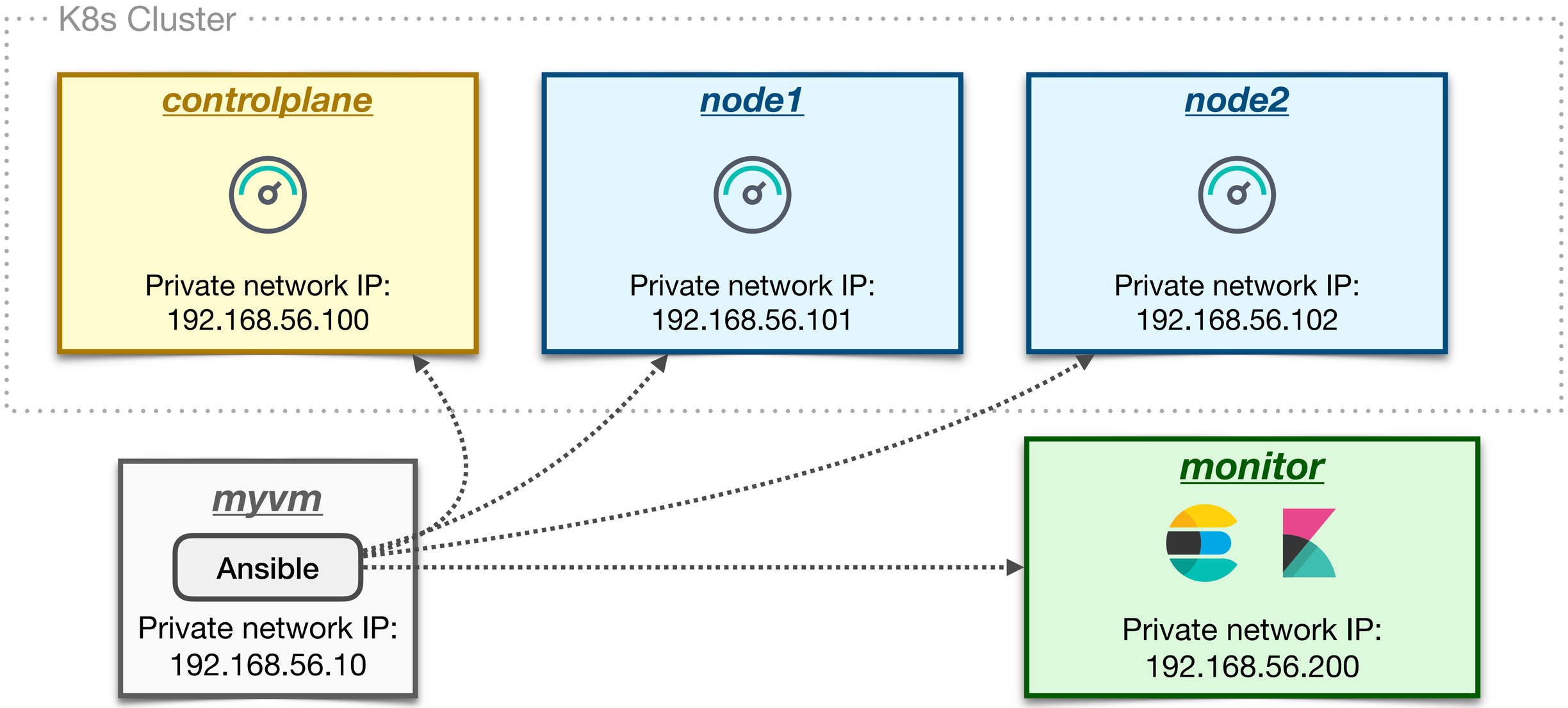
Find more about Elastic Stack at: https://www.elastic.co/elastic-stack

Goal

Cloud Provider

- Install and configure Elasticsearch and Kibana on the *monitor* VM.
- Install Metricbeat on K8s nodes (or the Docker setup from Guide 2).

Goal

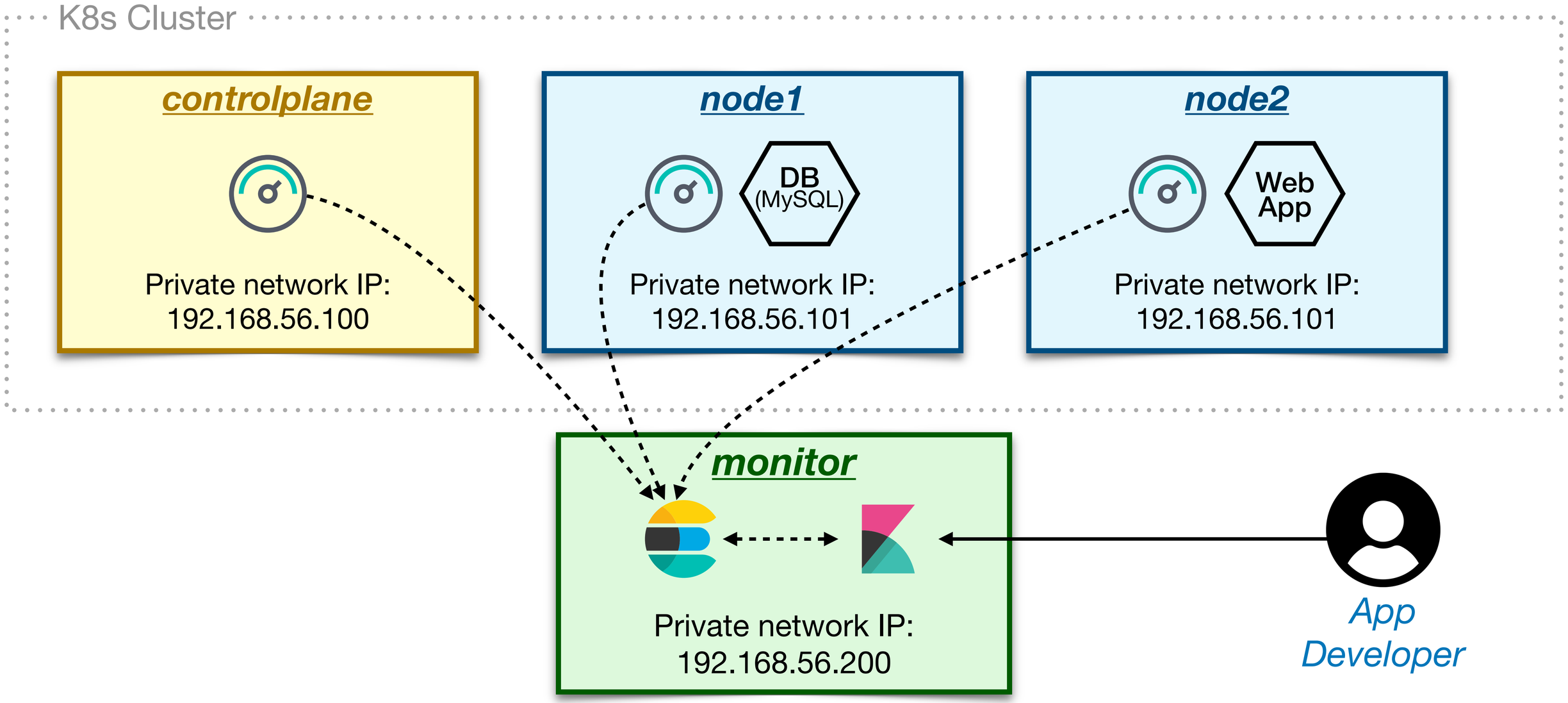

K8s Cluster
controlplane
Private network IP:
192.168.56.100
node1
Private network IP:
192.168.56.101
node2
Private network IP:
192.168.56.102
myvm
Ansible
Private network IP:
192.168.56.10
monitor
Private network IP:
192.168.56.200

Goal

App Developer

- Access Kibana and monitor resource usage.
- Create custom dashboards and visualizations.

Goal


K8s Cluster
controlplane
Private network IP:
192.168.56.100
node1
DB
(MySQL)
Private network IP:
192.168.56.101
node2
Web
App
Private network IP:
192.168.56.101
monitor
Private network IP:
192.168.56.200
App
Developer