Antelope Ahoy

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Outline

- Background
- Containers and advantages
- Containerized Antelope
- Bootstrap
- Antelope in the Cloud (again)
- Cloud installation overview
- Webservices integration
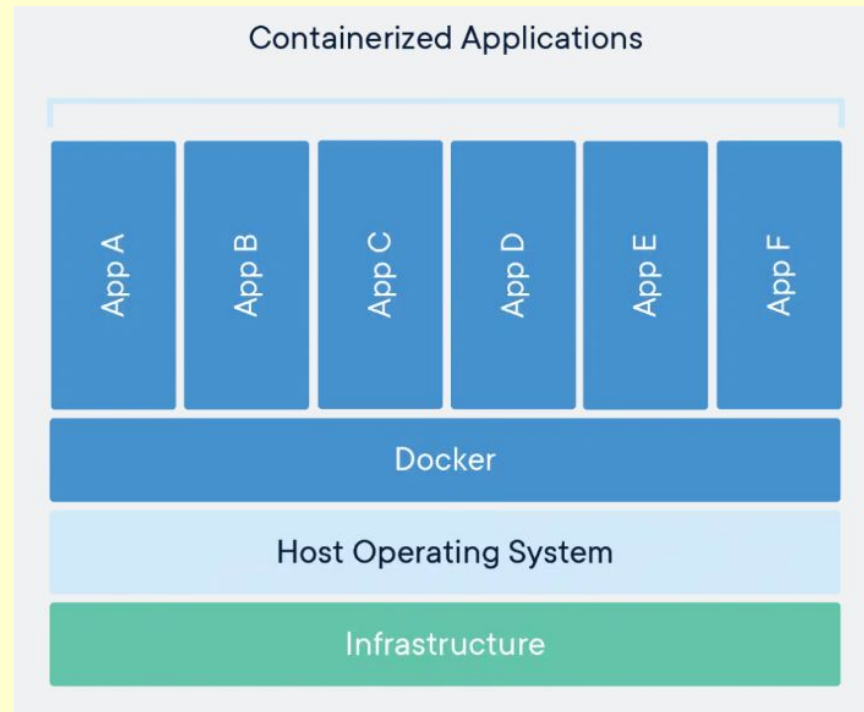- Feedback/discussions/questions

Background

- Ambli, LLC Contracting with BRTT
- Ported Antelope Python modules to Python 3 (part of Antelope 5.9 release)
- FDSN Webservices (Antelope 5.12)
- On-going effort
  - Current talk

What are containers

A standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another.

Containerized Applications

App A | App B | App C | App D | App E | App F

Docker

Host Operating System

Infrastructure

What are containers

- Network namespaces
- Process namespaces
- Linux cgroups (resource management)

Advantages of containerized applications

- Portability – Write once, run anywhere (local or cloud)
- Self-contained dependencies
- Good workload isolation – Process and network namespaces
- Faster application startups
- Lightweight

Containerized Antelope

- Started development earlier this year based on Antelope customer interest
- Functional Antelope solution using Ubuntu base image
- Tested solution on OSX (Docker Desktop) and Ubuntu 22.04 (Docker 23.0.4)

Containerized Antelope

- Headless mode only
- Next iteration to ship with VNC support
- Supported on local environment and Google Cloud (alpha)

Requirements

- Docker (non-GCP environments)
- IP/subnet based licensing
- Publicly accessible static IP required for licensing purposes

Antelope Bootstrap Script

- Developed bootstrap script to install and run containerized Antelope on hosts
- Intent is to make it easy for users to setup host to support, install and run containerized Antelope
- Script includes requesting license from BRTT
- Download requests:
    - Email support@brtt.com for bootstrap installer
    - Customer download site for Docker Antelope image: http://downloads.brtt.com/customer_download

Installation workflow demo

Antelope in the Cloud

- Antelope already running in Cloud compute instances
- This time, it is containerized
- Containerized Antelope deployed on Google Cloud Platform (GCP)
- Container orchestration managed by Kubernetes
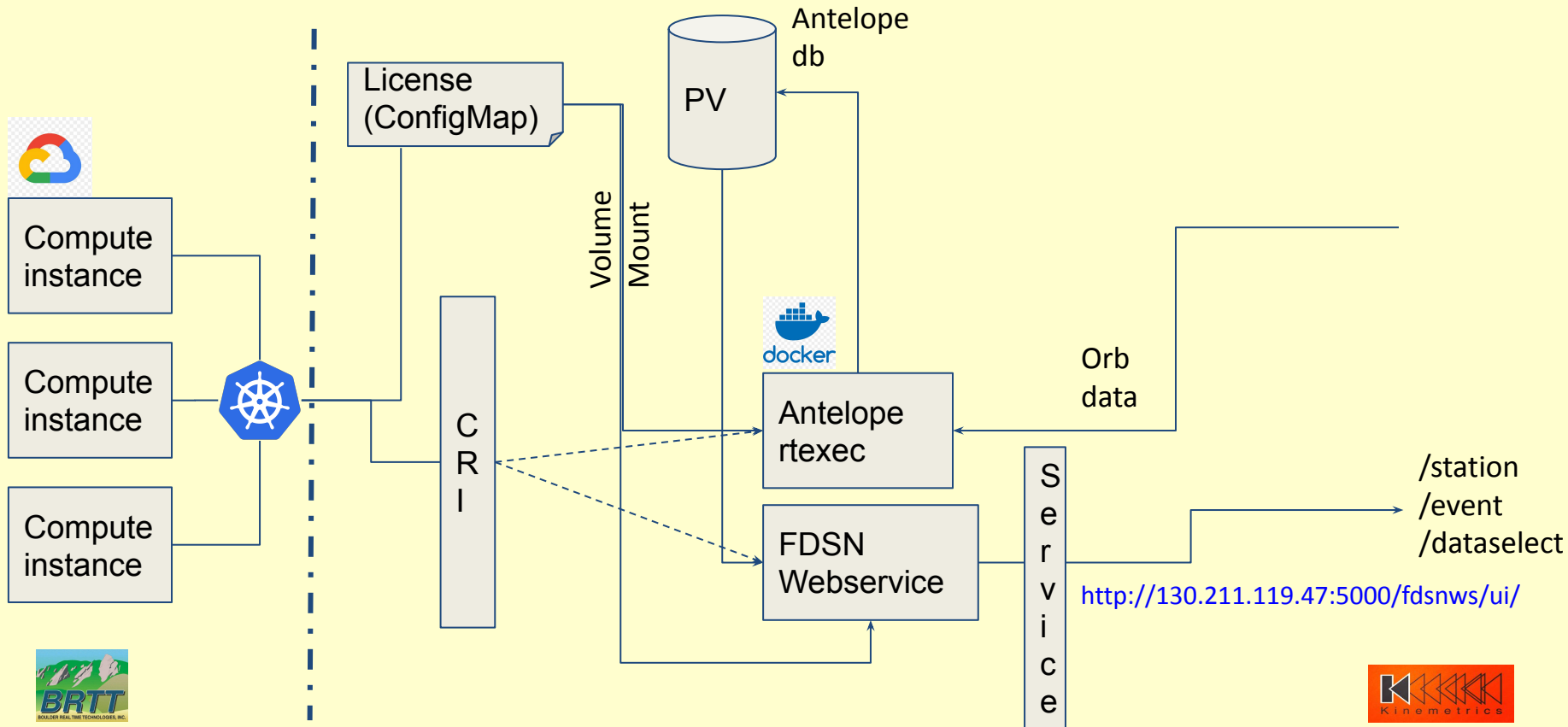- Application managed using YAML definitions to describe Kubernetes objects

Webservices Integration

- FDSN Webservice instance deployed on GCP
- Serving station, event and dataselect (waveform) APIs
- Serving GSNDemo data

Cloud installation Overview

Cloud installation Overview

https://console.cloud.google.com/kubernetes/list/overview?project=antelope-poc

Future Work

- VNC server integration
- Port Antelope demo on AWS
- Iterate on bootstrap installer, get it in the hands of alpha testers (Feedback welcome)
- Refine Cloud solution
- Containerized Antelope is a monolith currently. Move to microservice architecture

Future Work

- Harden webservices integration
- Full stack (compute instance, Docker/K8s, Antelope) support model
- User guidance

Questions/Comments/Requests?

Thank you

Helpful links/references

- https://tanzu.vmware.com/developer/blog/a-container-is-a-linux-namespace-and-networking-basics/
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