Diagrams Package In Python

A sophisticated approach to creating diagrams

Bhavika Sewpal

August 11, 2022

- ▶ Faster than methods that involve manually inserting and editing images
- ▶ Automatic alignment of icons and arrows
- ▶ Consistency of icons
- ▶ Easy to make updates
- ▶ Easy to monitor changes in the diagrams
- ▶ Can be included as part of a project in a github repository as python code

Purpose

- ▶ Diagrams let you draw the cloud system architecture in Python code
- ▶ Diagrams currently supports main major providers including:
  - ▶ AWS
  - ▶ Azure
  - ▶ GCP
  - ▶ Kubernetes
  - ▶ Saas

Requirements

- Diagrams require Python 3.6 or higher
- It uses Graphviz - an open source graph visualization software - to render the diagrams

- Diagrams has 4 concepts:
  - Diagrams
  - Nodes
  - Clusters
  - Edges

Diagrams

▶ Diagram represents a global diagram context
▶ A diagram context is created with the Diagram class

```python
from diagrams import Diagram
from diagrams.k8s.compute import Pod

with Diagram("Simple Diagram", show=False):
    Pod("pod instance")
```

pod instance
Simple Diagram

Nodes

▶ A node represents a single system component
▶ A node consists of three parts:
  ▶ a provider
  ▶ a resource type
  ▶ a name

```
from diagrams.aws.compute import EC2
```

In the above example, aws is the provider, compute is the resource type and EC2 is the name

Nodes - Data Flow

- ▶ >> : Connects node in left to right direction
- ▶ << : Connects node in right to left direction
- ▶ : : Undirected

```python
from diagrams import Diagram
from diagrams.aws.compute import EC2
from diagrams.aws.database import RDS
from diagrams.aws.network import ELB
with Diagram("Group Data Flow", show=False, direction="TB"):
    ELB("lb") >> [EC2("worker1"),
                  EC2("worker2"),
                  EC2("worker3"),
                  EC2("worker4"),
                  EC2("worker5")] >> RDS("events")
```

Group Data Flow
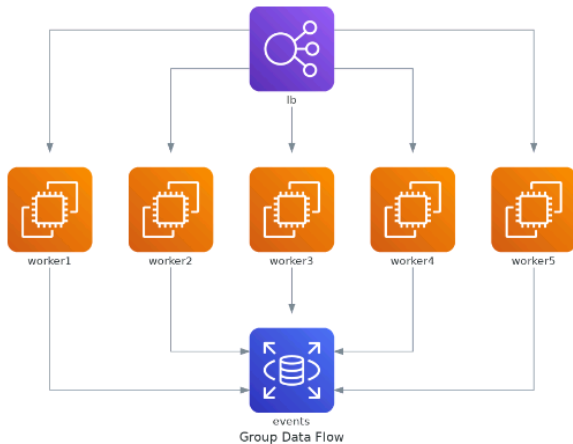
Clusters

▶ Cluster allows you to group nodes in an isolated group
▶ Clusters can be nested as well

```python
from diagrams import Cluster, Diagram
from diagrams.aws.compute import ECS
from diagrams.aws.database import RDS
from diagrams.aws.network import Route53
with Diagram("Simple Web Service with DB Cluster", show=False):
    dns = Route53("dns")
    web = ECS("service")
    with Cluster("DB Cluster"):
        db_primary = RDS("primary")
        db_primary - [RDS("replica1"),RDS("replica2")]
    dns >> web >> db_primary
```

Clusters (cont.)
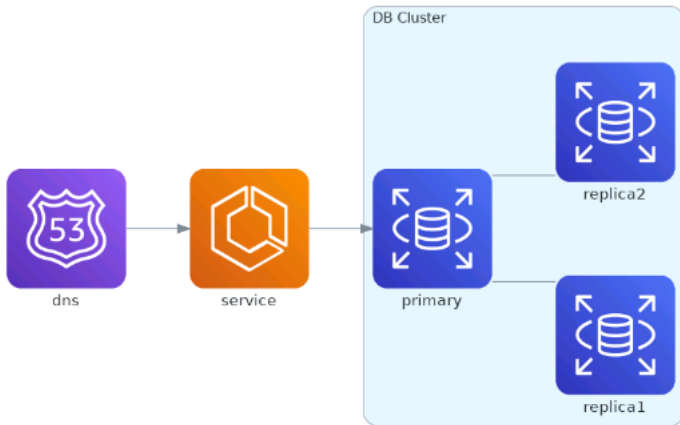
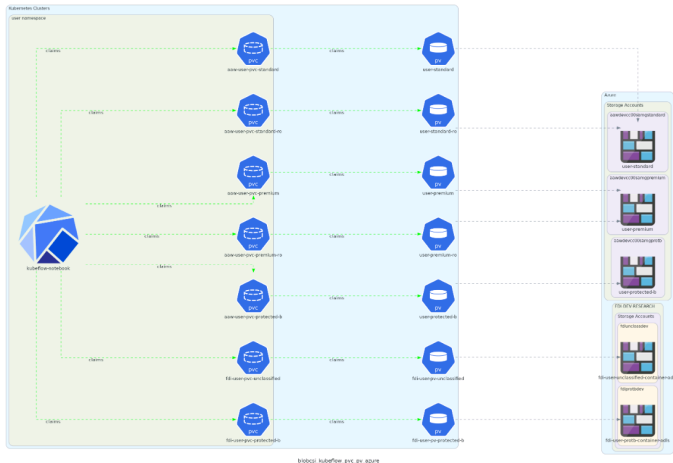Simple Web Service with DB Cluster

Edges

- An edge represents a linkage between nodes with some additional properties
- An edge object contains three attributes:
  - label
  - color
  - style (example: dashed, dotted, bold)

► Diagram showing the links between Kubeflow Notebooks, PVCs, PVs and Azure Containers

► blobcsi_kubeflow_pvc_pv_azure.py

► This diagram illustrates that:
  ► clusters can be nested
  ► nodes can be joined across clusters
  ► the edges can be labelled and formatted

blobcsi_kubeflow_pvc_pv_azure

Questions?