2023 SUMMIT | APACHE • SkyWalking
CHINA · SHANGHAI

2023 · 上海
SkyWalking Summit

纵目 tetrate

演讲主题

柯振旭

Tetrate 工程师、 Apache SkyWalking PMC 成员

“ 使用 Terraform 与 Ansible 快速部署 SkyWalking 集群 ”

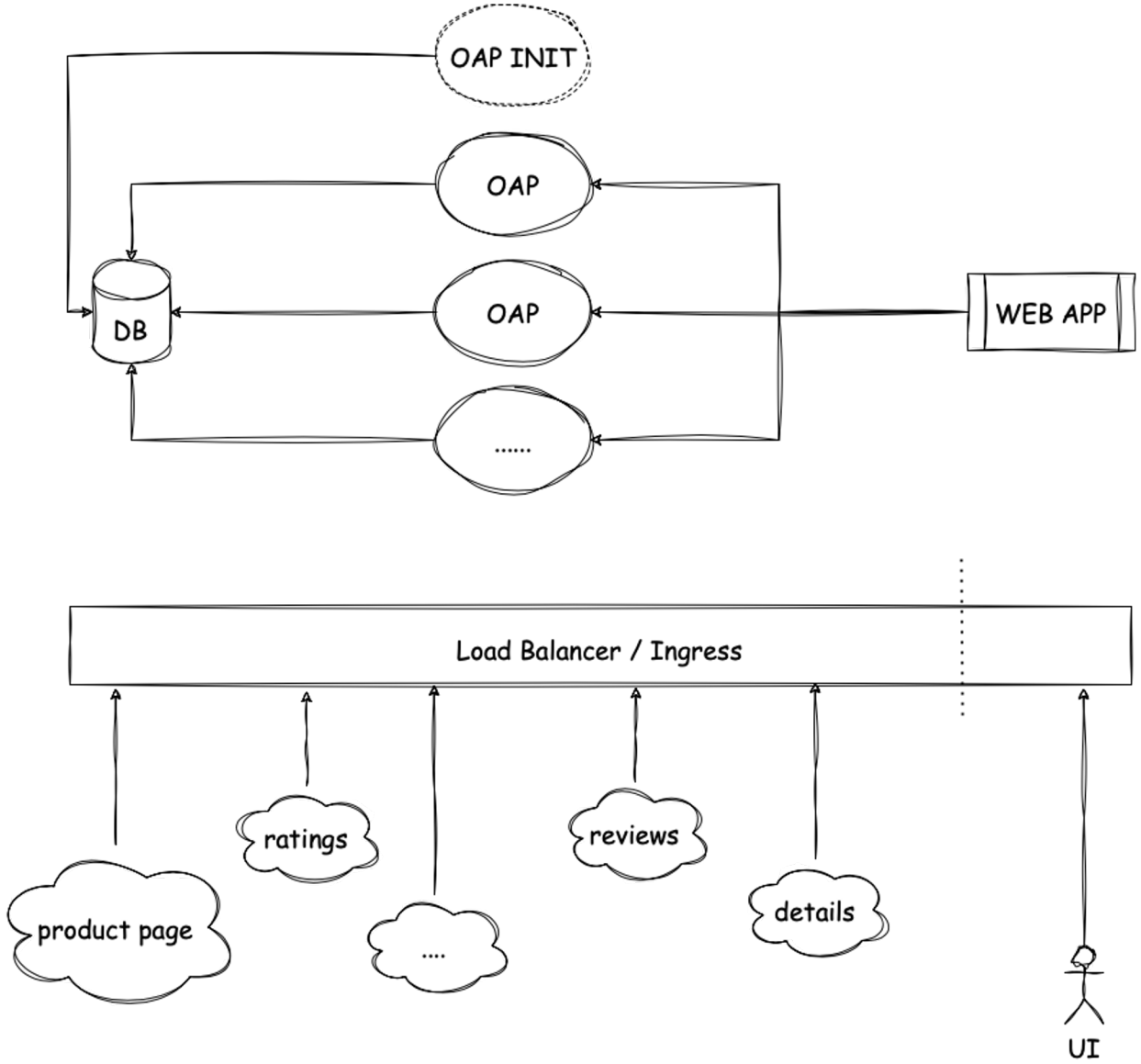
目录

CONTENTS

01

SkyWalking 部署架构

SkyWalking 部署架构



- 数据库
- OAP 初始化节点
- OAP 节点 ✖ N
- 集群管理 (ZK)
- Web App ✖ M
- 业务服务...

SkyWalking 部署方式

- Docker Compose (最快速的启动方式)
  - 本地机器
  - 单节点
  - Demo

```
pwd
/Users/kezhenxu94/workspace/skywalking
export OAP_IMAGE=apache/skywalking-oap-server:latest
export UI_IMAGE=apache/skywalking-ui:latest
docker compose -f docker/docker-compose.yml up
docker ps
IMAGE                                                PORTS
apache/skywalking-ui:latest                          0.0.0.0:8080->8080/tcp,
apache/skywalking-oap-server:latest                  0.0.0.0:11800->11800/tcp, 0.0.0.0:12800->12800/tcp
docker.elastic.co/elasticsearch/elasticsearch-oss:7.4.2 0.0.0.0:9200->9200/tcp
...
docker compose -f docker/docker-compose.yml down
```

SkyWalking 部署方式

- Helm Chart (Kubernetes 环境推荐部署方式)
  - 功能集齐全
  - 生产环境可用
  - 集群模式
  - 扩缩容

```
helm install skywalking \
  oci://registry-1.docker.io/apache/skywalking-helm \
  --version 4.3.0 \
  -n skywalking \
  --set oap.image.tag=9.6.0 \
  --set oap.storageType=elasticsearch \
  --set ui.image.tag=9.6.0
```

https://github.com/apache/skywalking-helm

SkyWalking 部署方式

- SWCK (SkyWalking Cloud on Kubernetes)
  - 基于 CRD/Operator 模式
    - OAP, Web App
    - Agent 自动注入
  - SkyWalking Metrics Adapter
    - 基于 Metrics 的业务服务 HPA

```yaml
apiVersion: operator.skywalking.apache.org/v1alpha1
kind: OAPServer
metadata:
  name: minimal
spec:
  version: 9.1.0
  instances: 1

---
apiVersion: operator.skywalking.apache.org/v1alpha1
kind: UI
metadata:
  name: minimal
spec:
  version: 9.1.0
  instances: 1
```

https://github.com/apache/skywalking-swck

SkyWalking 部署方式

- Shell Script
  - …

```
❯ ls -alh apache-skywalking-apm-bin/bin
total 80
drwxr-xr-x  12 kezhenxu94  wheel   384B Oct 20 21:06 .
drwxr-xr-x@ 14 kezhenxu94  wheel   448B Oct 20 21:06 ..
-rwxr-xr-x@  1 kezhenxu94  wheel   1.3K Sep  1 21:47 oapService.bat
-rwxr-xr-x@  1 kezhenxu94  wheel   1.5K Sep  1 21:47 oapService.sh
-rwxr-xr-x@  1 kezhenxu94  wheel   1.3K Sep  1 21:47 oapServiceInit.bat
-rwxr-xr-x@  1 kezhenxu94  wheel   1.5K Sep  1 21:47 oapServiceInit.sh
-rwxr-xr-x@  1 kezhenxu94  wheel   1.3K Sep  1 21:47 oapServiceNoInit.bat
-rwxr-xr-x@  1 kezhenxu94  wheel   1.5K Sep  1 21:47 oapServiceNoInit.sh
-rwxr-xr-x@  1 kezhenxu94  wheel   941B Sep  1 21:47 startup.bat
-rwxr-xr-x@  1 kezhenxu94  wheel   934B Sep  1 21:47 startup.sh
-rwxr-xr-x@  1 kezhenxu94  wheel   1.4K Sep  1 21:47 webappService.bat
-rwxr-xr-x@  1 kezhenxu94  wheel   1.5K Sep  1 21:47 webappService.sh
```

SkyWalking 部署方式

- Docker Compose
- Helm Chart
- SkyWalking Cloud on Kubernetes
- Shell Script

02

Terraform & Ansible 简介

Terraform

Automate infrastructure on any cloud with Terraform

Infrastructure automation to provision and manage resources in any cloud or data center.

Try Terraform Cloud

Download Terraform →

Deliver infrastructure as code

Terraform codifies cloud APIs into declarative configuration files.

https://terraform.io/

Terraform - 示例

- 创建一个 AWS 虚拟机
- 允许公网访问 80 端口

```
terraform init
terraform plan
terraform apply
terraform output
public_ip = "16.163.57.69"
```

```
# main.tf
# ... provider
resource "aws_instance" "example" {
  ami                    = "ami-0770b99ae78aaa58f"
  key_name               = "kezhenxu94"
  instance_type          = "t3.micro"
  vpc_security_group_ids = [aws_security_group.instance.id]
}
resource "aws_security_group" "instance" {
  name = "example"
  egress {
    from_port   = 0
    to_port     = 0
    protocol    = "-1"
    cidr_blocks = ["0.0.0.0/0"]
  }
  ingress {
    from_port   = 80
    to_port     = 80
    protocol    = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
  ingress {
    from_port   = 22
    to_port     = 22
    protocol    = "tcp"
    cidr_blocks = ["120.229.254.81/32"]
  }
}
output "public_ip" {
  value = aws_instance.example.public_ip
}
```

Ansible

Ansible is an IT automation tool. It can configure systems, deploy software, and orchestrate more advanced IT tasks such as continuous deployments or zero downtime rolling updates.

https://docs.ansible.com/

Ansible

- 使用 yum 安装 Nginx
- 启动 Nginx

```
hostname
kezhenxu94s-MacBook-Pro.local
ansible-playbook -i hosts site.yaml
# ...
curl -s -o /dev/null -w "%{http_code}" 16.163.57.69
200
```

Control Node

```
# hosts
[nginx]
16.163.57.69
[nginx:vars]
ansible_ssh_private_key_file=~/Downloads/kezhenxu94.pem

# site.yaml
- hosts: nginx
  remote_user: ec2-user
  become: true
  become_method: sudo
  tasks:
    - name: Install Nginx
      ansible.builtin.yum:
        name: nginx
        state: present
        update_cache: true
      notify: start nginx
  handlers:
    - name: start nginx
      service:
        name: nginx
        state: started
```

Managed Node

Playbook

03

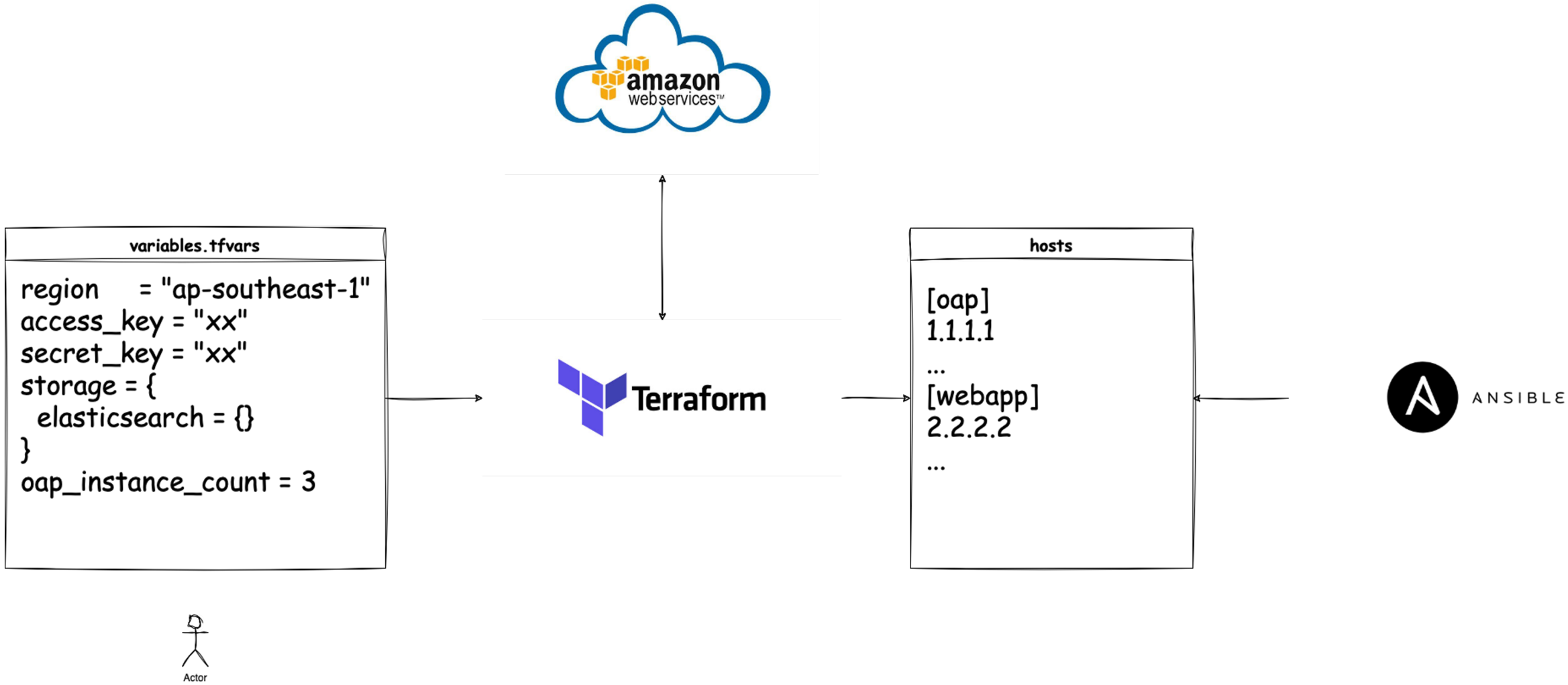
skywalking-terraform 项目实践

skywalking-terraform 项目实践

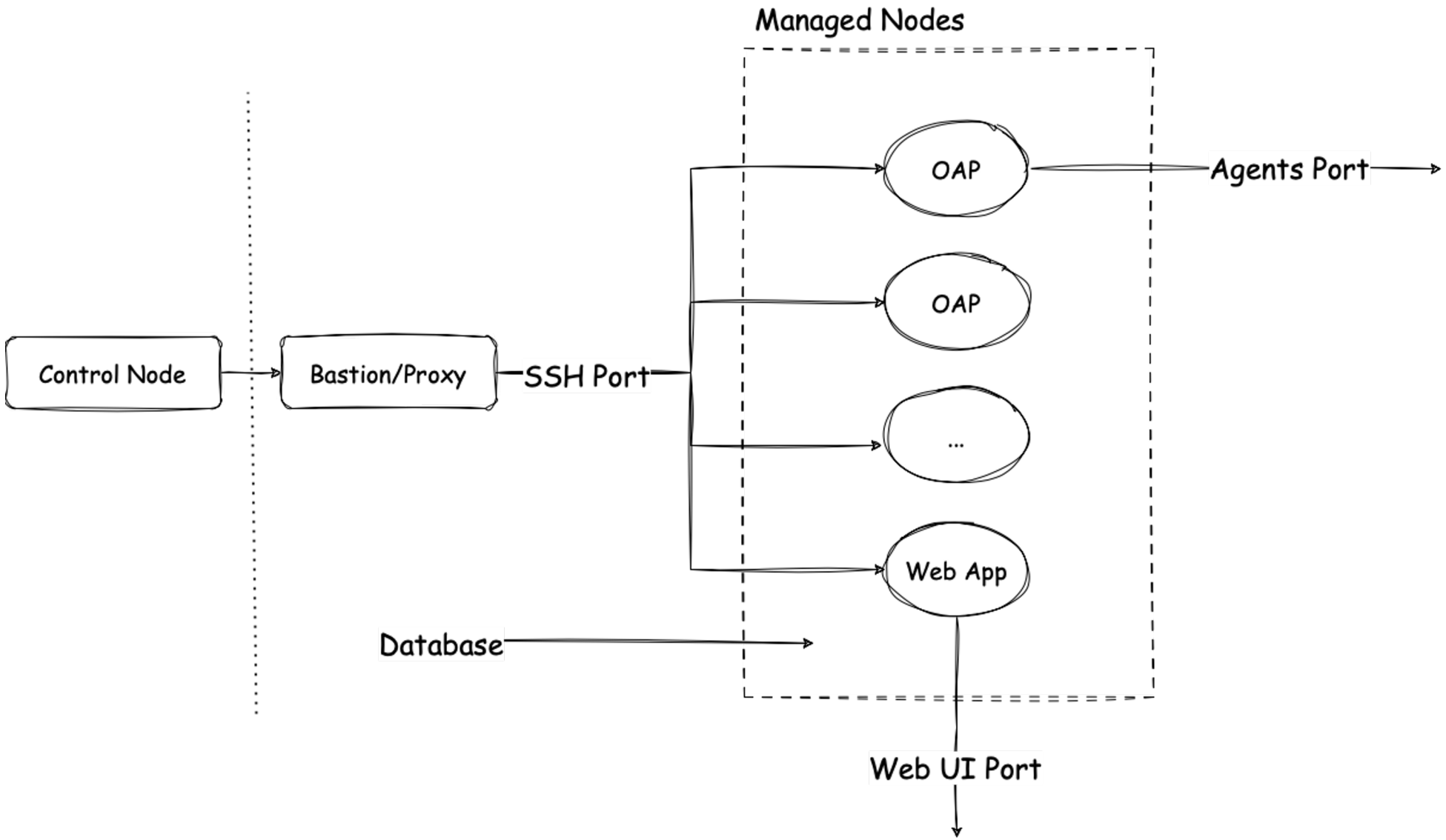
- Terraform: 创建基础设施
  - EC2 实例: OAP, WebApp…
  - 网络配置: OAP <-> WebApp, OAP <-> Agent
  - 负载均衡
  - …
- Ansible: 安装部署
  - 下载/安装: JRE, SkyWalking…
  - 部署服务: SkyWalking
  - …

https://github.com/apache/skywalking-terraform

skywalking-terraform 项目实践 - 交互



skywalking-terraform 项目实践



skywalking-terraform 项目实践

DEMO VIDEO

skywalking-terraform 项目实践

- 使用场景
  - Demo
  - PoC
  - 压力测试
  - 生产部署
  - ...

Q&A

欢迎提问交流

（仅限2位提问）

2023 SUMMIT | APACHE • SkyWalking
CHINA · SHANGHAI

2023 · SkyWalking Summit

感谢您的观看