Deploy an API gateway with Docker

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About me

- I work as **Platform Tech Lead** at **Oxford University Press (OUP)**

- I am responsible for **system architecture and DevOps** (CI, Docker, AWS, deployment)

- I started using **APIs and Docker** in 2014-15 for developing language resources at OUP
Oxford University Press (OUP)

- Oxford University Press (OUP) is a world-renowned dictionary publisher

- OUP launched the Oxford Global Languages (OGL) initiative to digitize under-represented languages

- OUP launched languages websites for Zulu, Northern Sotho, Malay, Urdu, Indonesian, and Setswana
Oxford Global Languages (OGL)

Vision

▶ Localized websites and digital access for multiple languages
▶ Language communities contributing content (crowdsourcing)
▶ Supporting digitally under-represented languages
▶ Flexible data serving multiple needs
Zulu language website powered by APIs and Docker

isizulu BETA
Oxford Living Dictionaries

Type word or phrase

Home > Translate > English to isiZulu > container

Translation of container in isiZulu

container

NOUN (plural containers)
isiphathizinto, sitsha

Examples
Fill this container with water
Gewalisa lesi phathizinto ngamanzi

How do you say raffle in isiZulu?

How do you say snack in isiZulu?

Newly added words
assemblage
sbex_mthembu329
crafts
junineo
image
kekeletso
carving
THALENTE
ADD A WORD
API Gateway
What is an API gateway?

- An API gateway is a **single entry point for APIs** in a service infrastructure.

- It provides **authentication and authorization** layers.

- It routes, load balances, and caches requests to the API.
What is an API gateway?

Source: http://microservices.io/patterns/apigateway.html
Microservices architecture for OGL project

Frontend
- zu.oxforddictionaries.com
- nso.oxforddictionaries.com
- ms.oxforddictionaries.com
- ur.oxforddictionaries.com

Security
- autoscaling group
- Local NGINX API Gateway

Backend
- autoscaling group
- NGINX Web Server
- API v3
- RDF Triple Store
- RDS cache
- UGC
- UGC
Docker
What is Docker

- Docker is an open-source project that automates the deployment of applications into software containers.

- Docker packages an application with all of its dependencies - no more "worked on my machine" problems.

- Docker isolates applications and resources.

- Docker guarantees that the system will run the same regardless of the running environment - build, ship, and run any app, anywhere.
Traditional vs Docker Deployment

Docker Images and Containers

Object-oriented programming analogy:

- Docker images are like classes
- Docker images are blueprints
- Docker images are like recipes
- Docker containers are like objects
- Docker containers are concrete instances of Docker images
- Docker containers are like dishes
Why using Docker for an API gateway?

- Infrastructure as code
- Replicate configuration across environments
- Avoid dependencies conflicts
- Facilitate portability and automation
Technical Configuration

- Dockerfile
- nginx and 3scale
- https and SSL certificates
3scale Forum

Docker

Forum > Category API Access Control

Tagged:

Anonymous User  Published on: 6 Oct, 2015 03:15AM
Does 3scale have a Dockerfile to deploy the API gateway in a container?

Thanks!
Demo

- Build and run a container on AWS
- Run curl commands to interact with the API
- Debug logs inside the container
Benefits of Docker

- **Reusability**: spin up new containers in no time

- **Portability**: migrate quickly to bigger machines or from bare-metal to the cloud

- **Automation**: deployment is easily automated and less error-prone
Alternative Approaches
Docker API gateway from 3scale

Check out the 3scale implementation of a Docker API gateway:

https://github.com/3scale/docker-gateway
Alternative Approaches
Serverless Architecture

Check out:
- Mikael Puittinen’s workshop on AWS Serverless
- Nicolas Grenié’s presentation on Serverless API

Some considerations:
- Check your use cases and application architecture
- Make a cost analysis
- Check your cloud provider
- Server and serverless architectures can coexist
An **API gateway is a single entry point for APIs** and provides authentication and authorization layers.

Docker makes it easier to **replicate the configuration across multiple environments**.

Docker **automates deployment and makes it less error-prone**.
Thank you for your attention!

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Slides:
www.sandrocirulli.net/apidaysnordic2016

GitHub:
github.com/cirulls/docker-api-gateway

Links:
OGL programme: www.oxforddictionaries.com/ogl