



Gestión Automatizada de Contenedores con Openshift Container Platform

Noel Mamoghli

Digital & Cloud Native Application
DXC Technology

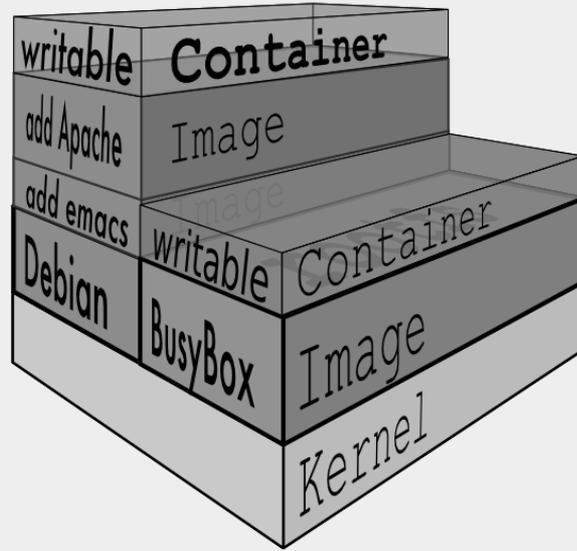
Carlos Sánchez Velez

Hybrid Offering Solution Architect
DXC Technology

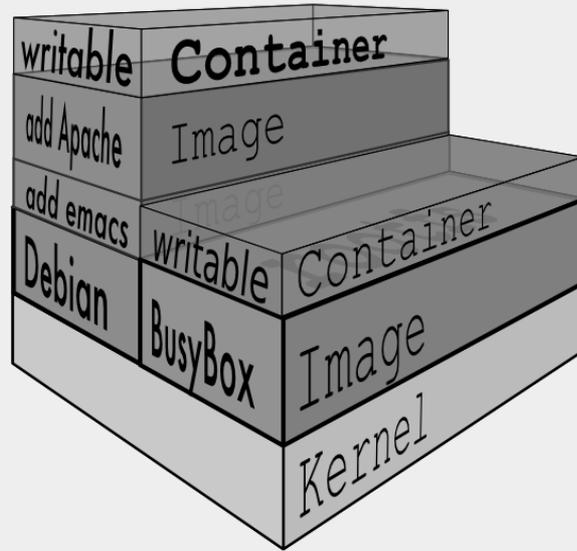
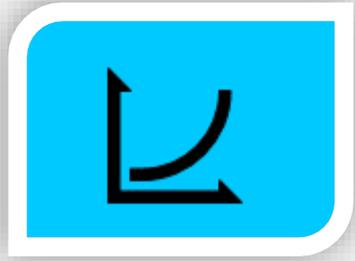
Agenda

- 01.** La Proliferación de Aplicaciones Virtualizadas:
Contenedores
- 02.** Problemática de la Gestión de Contenedores a Escala
- 03.** La Orquestación como Respuesta
- 04.** Otras Herramientas para facilitar la Gestión del Entorno

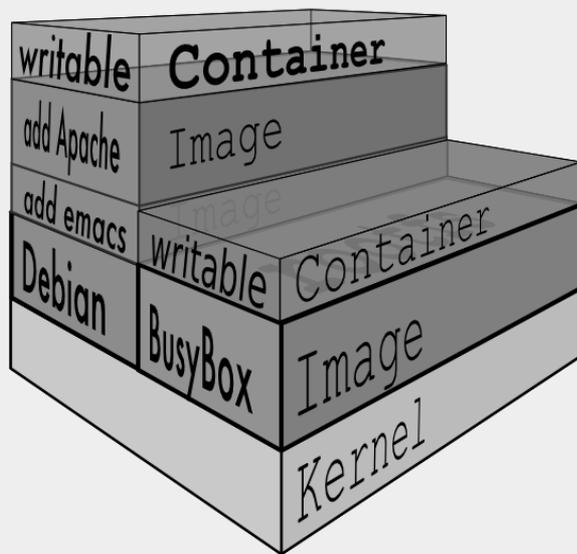
01. La Proliferación de Aplicaciones Contenerizadas



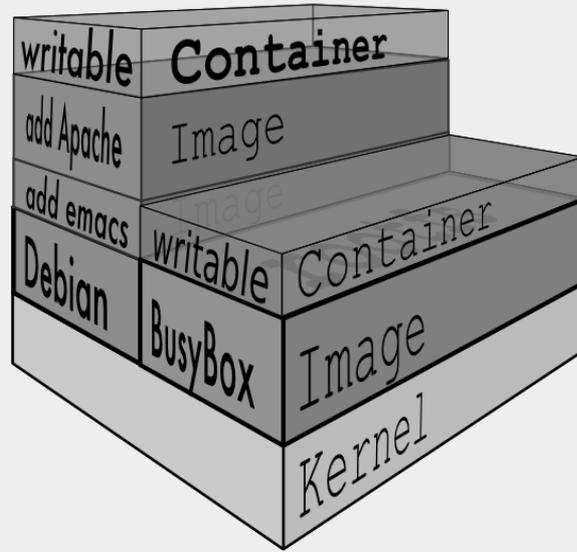
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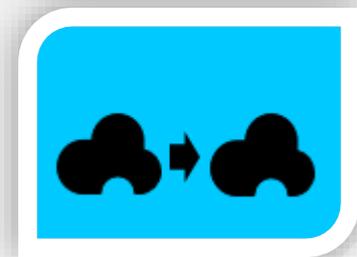
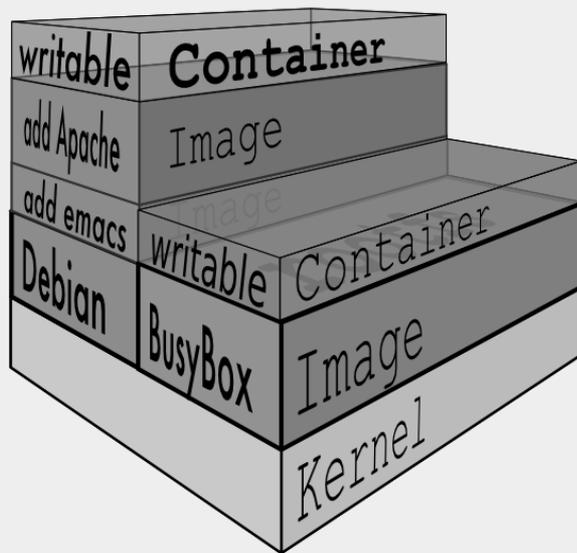
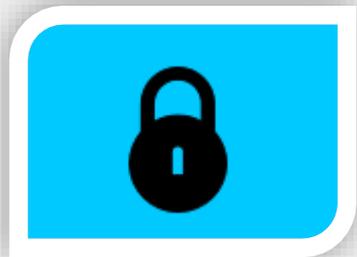
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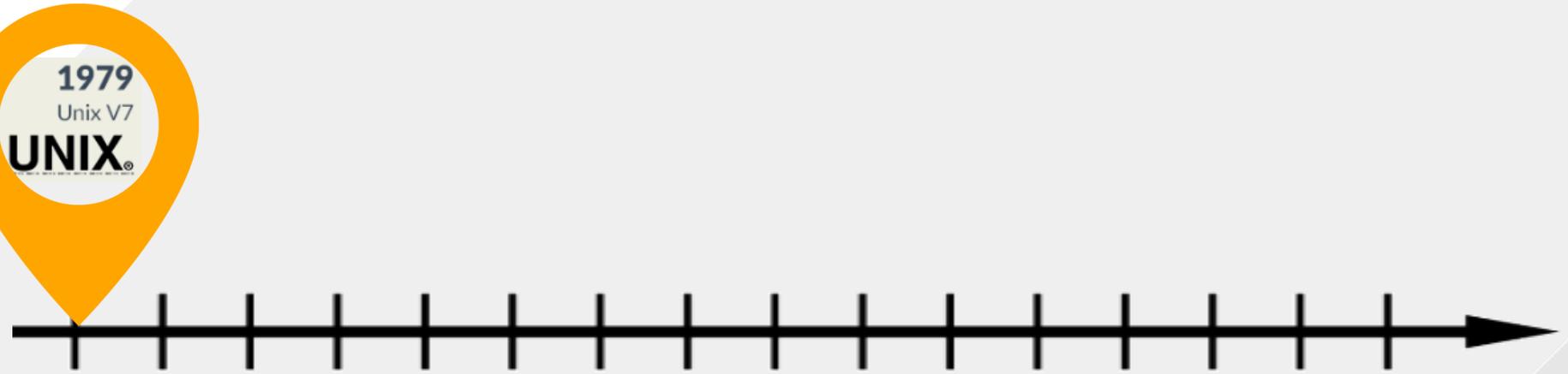
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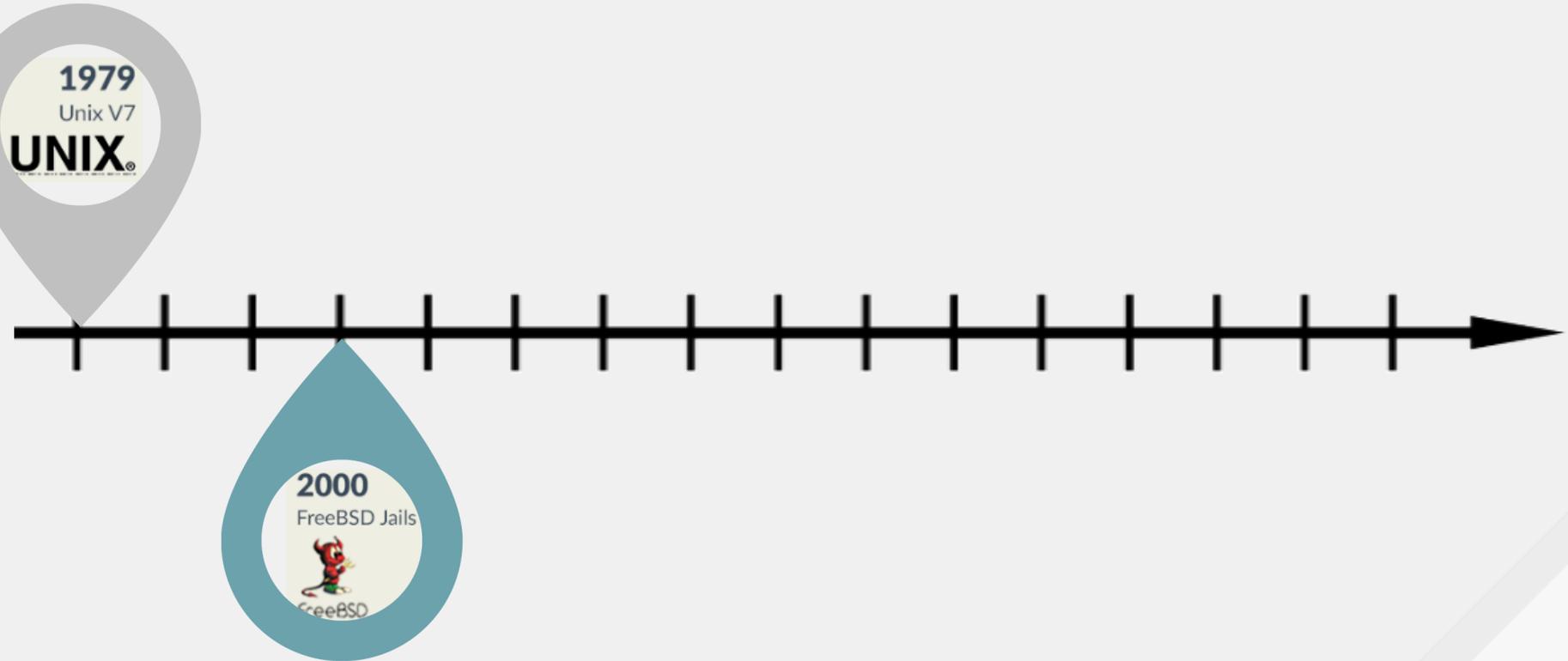
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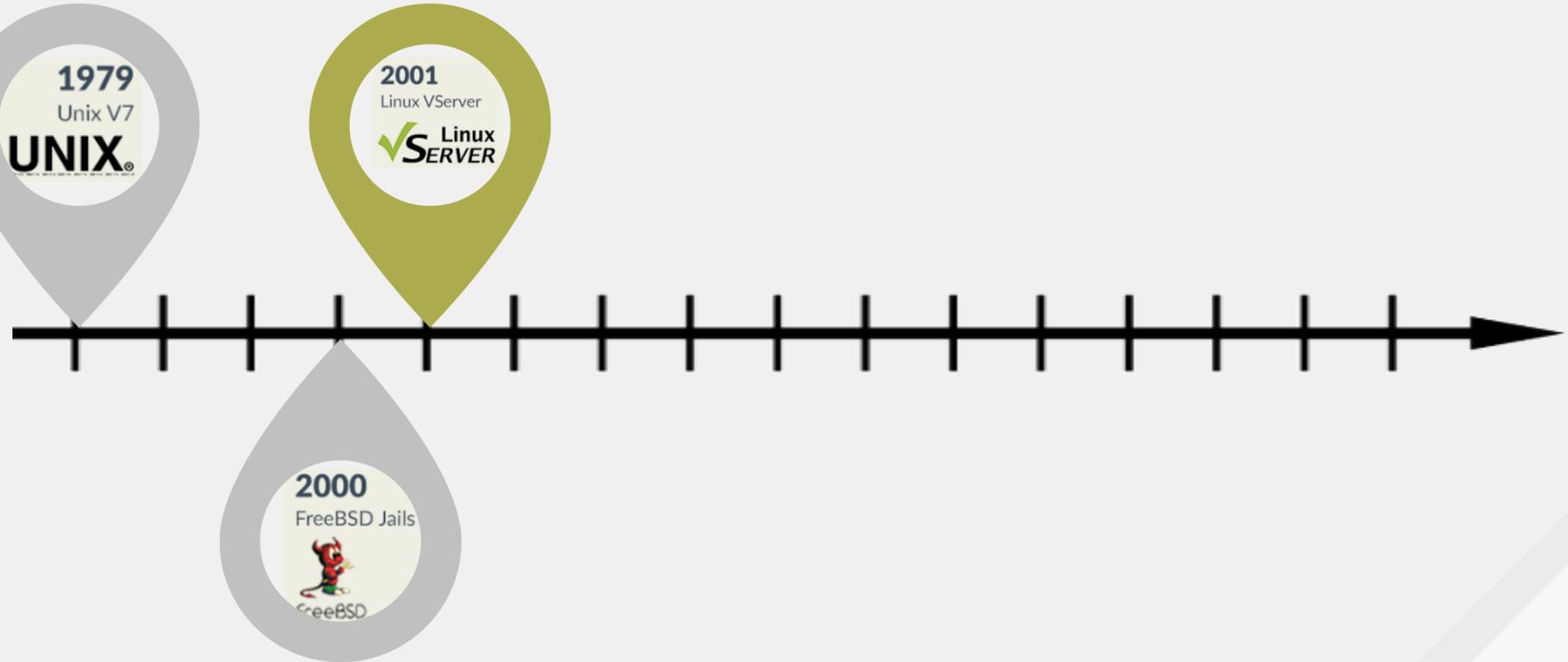
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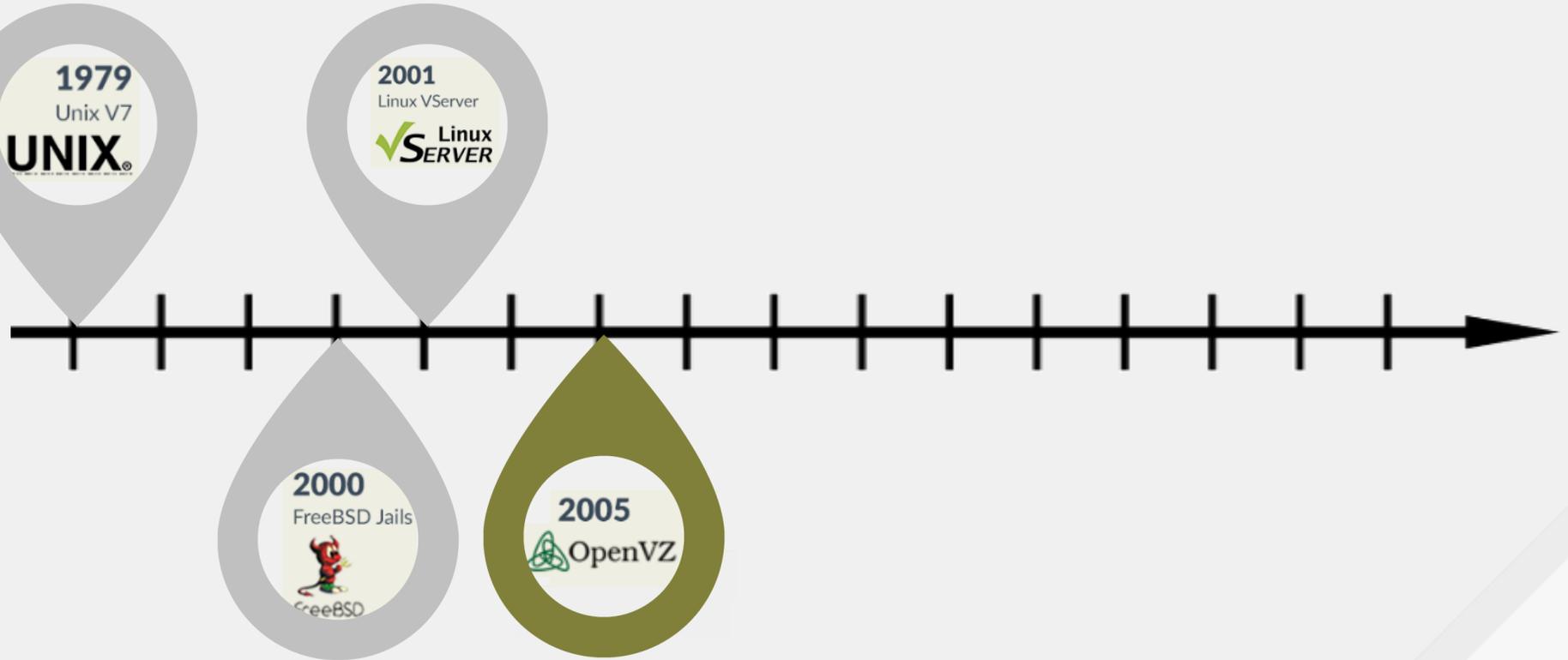
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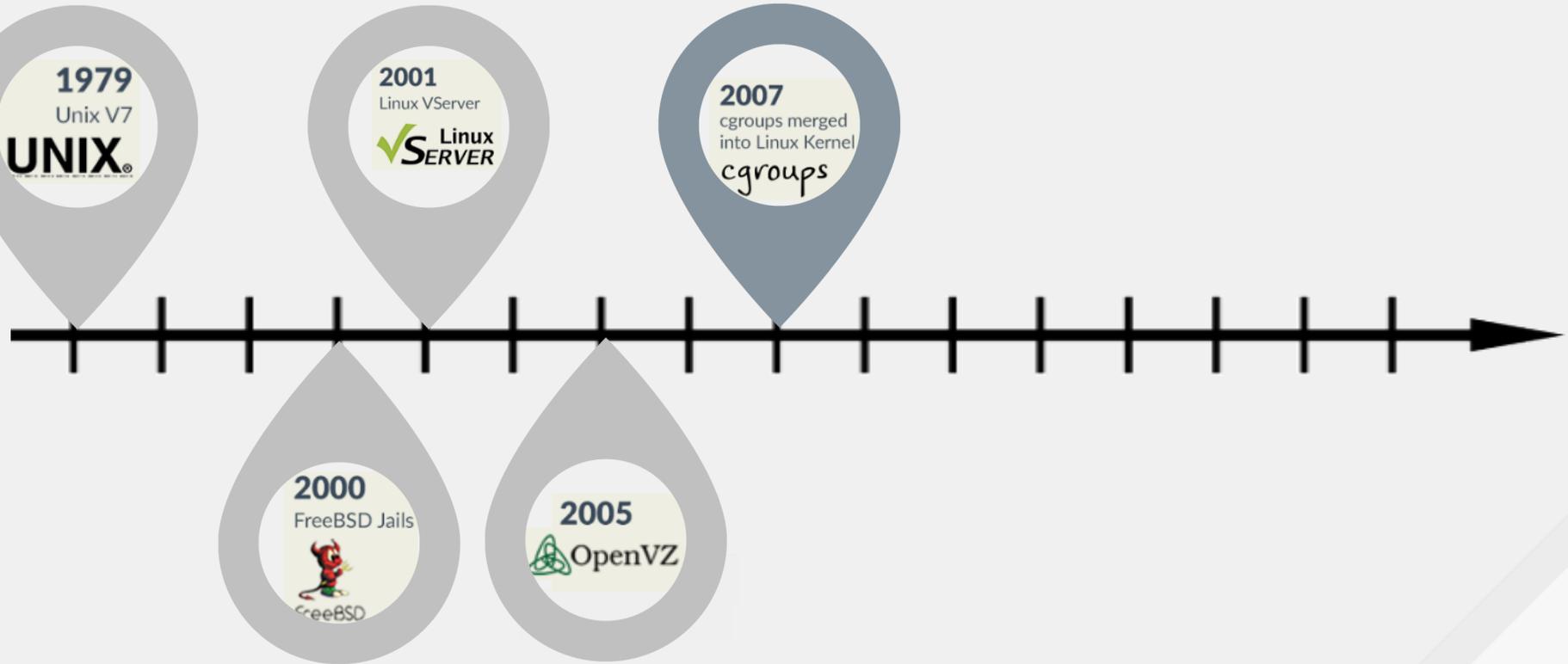
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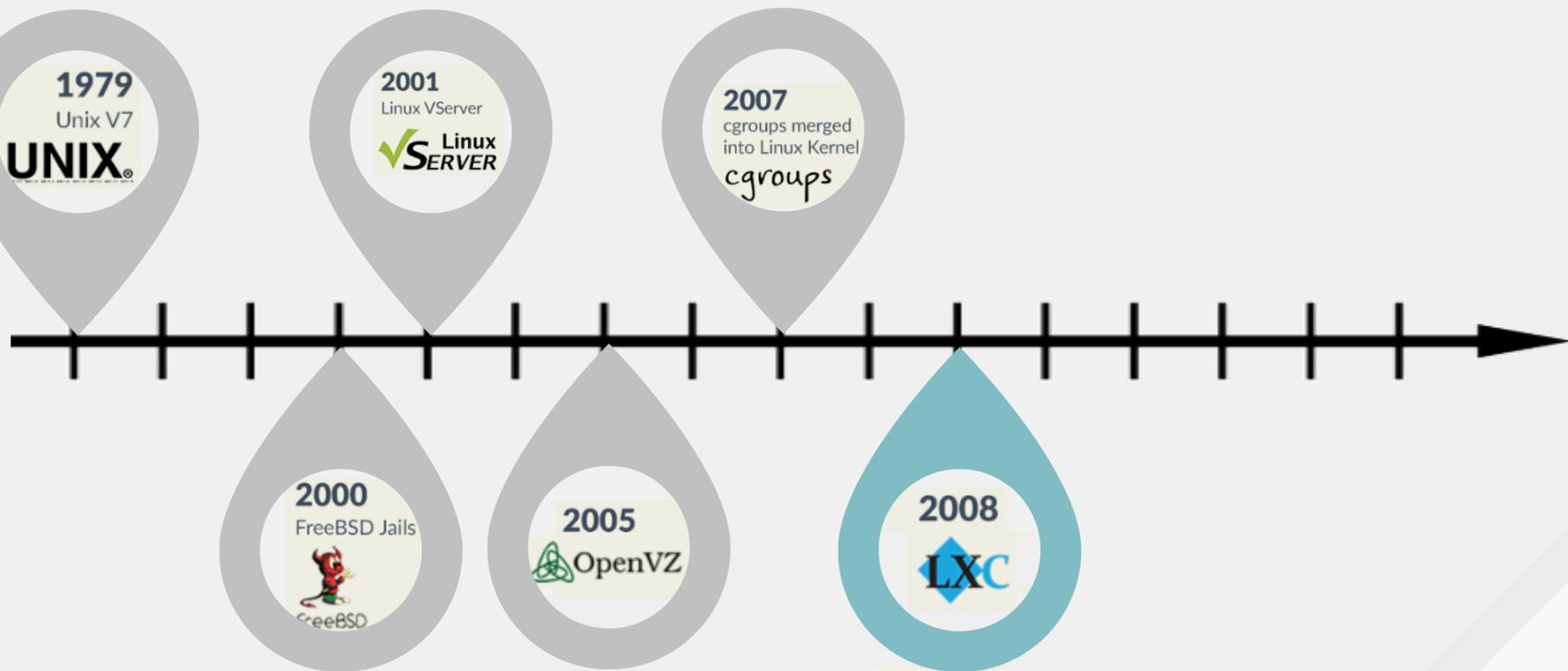
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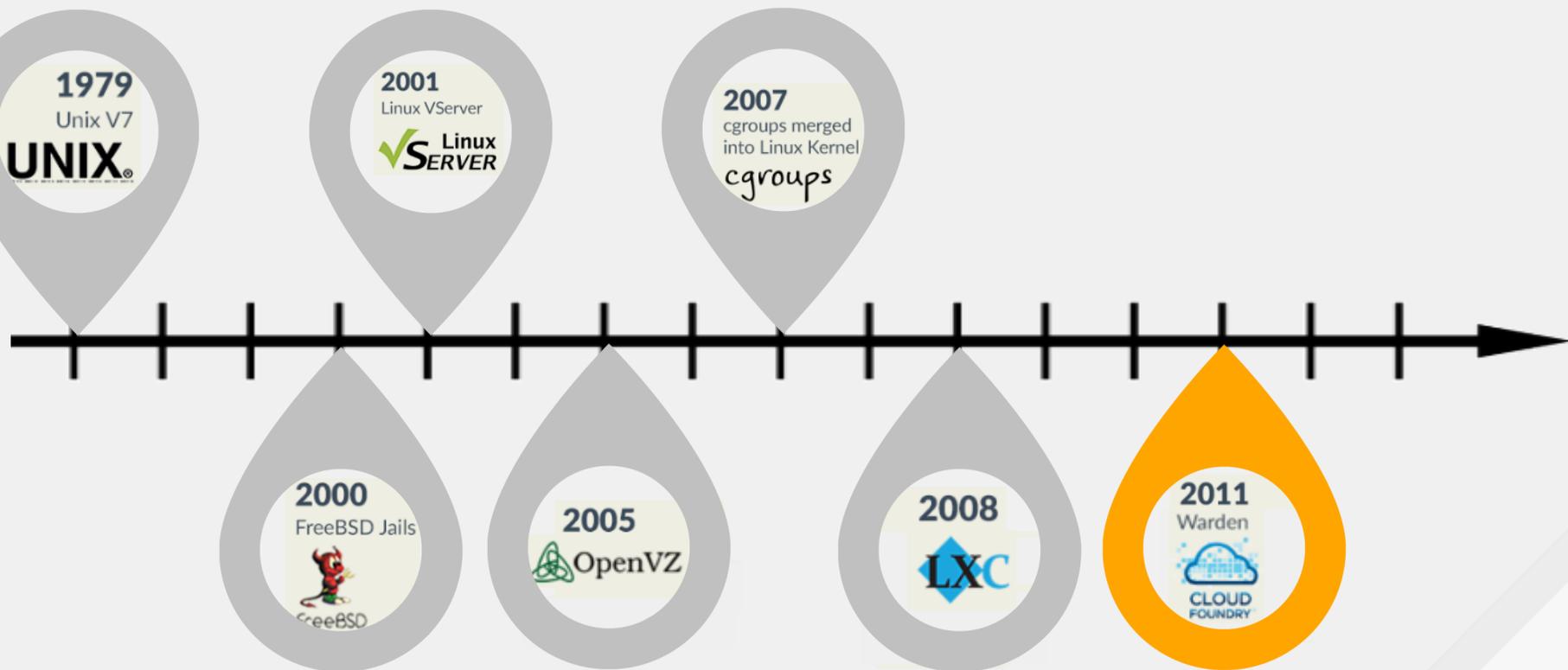
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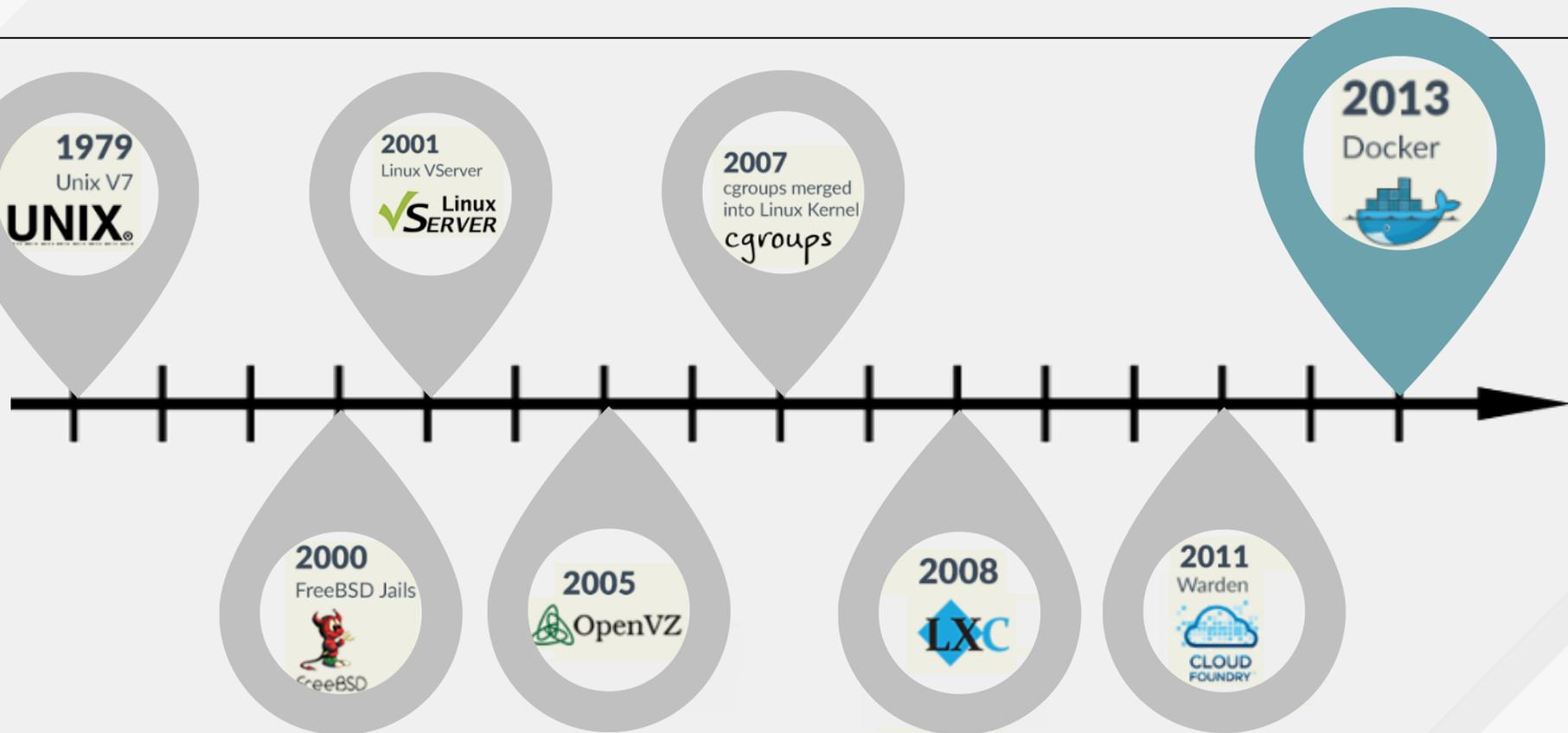
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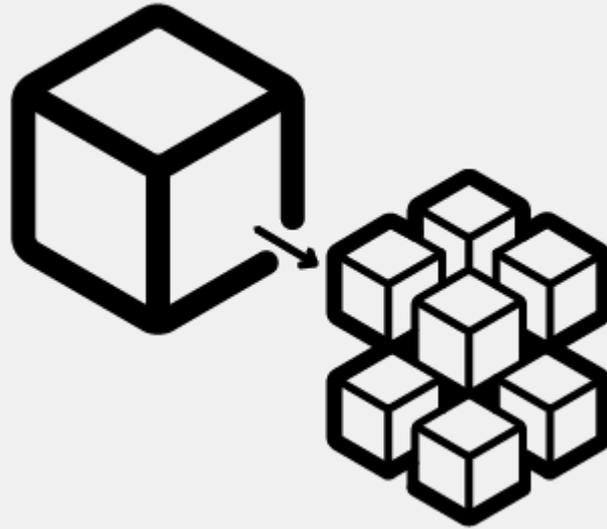
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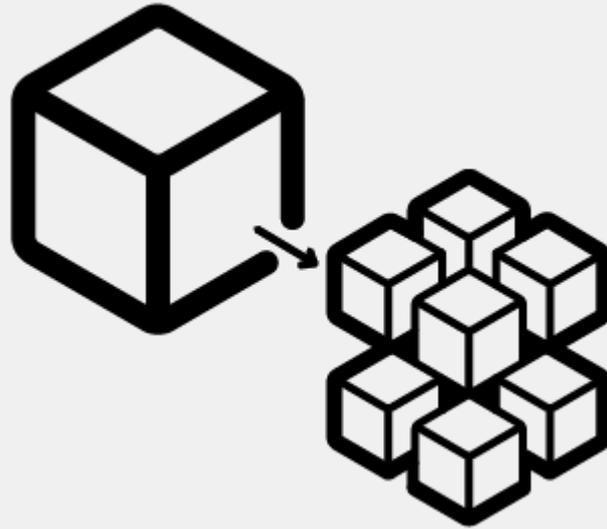
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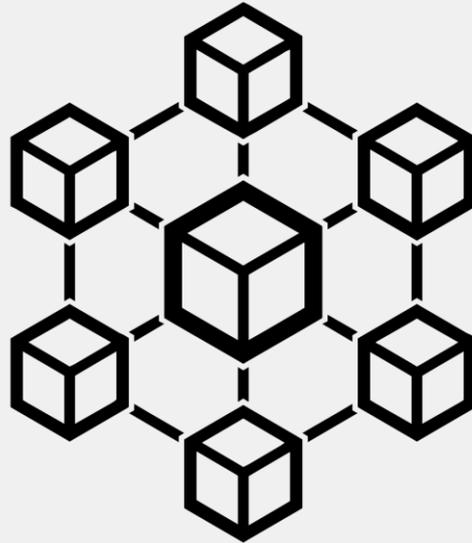


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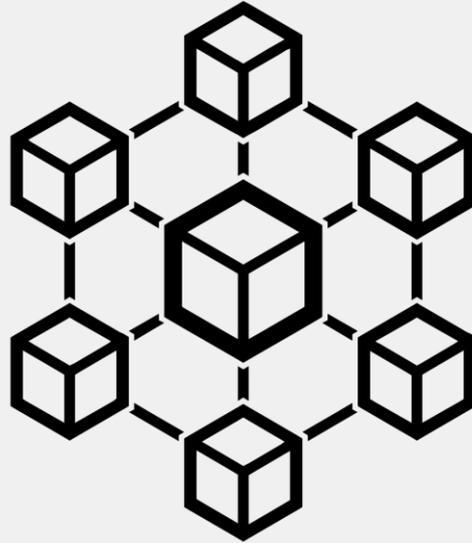


Transformación de Aplicaciones Monólicas

01. La Proliferación de Aplicaciones Contenerizadas



01. La Proliferación de Aplicaciones Contenerizadas



Arquitecturas basadas en μ Servicios

01. La Proliferación de Aplicaciones Contenerizadas

```
FROM containerregistryngp.dxc.io/appc3:1.0.0
MAINTAINER Noel Mamoghli – DXC Iberia NextGen
COPY AppC3 /app/AppC3
```



01. La Proliferación de Aplicaciones Contenerizadas

```
FROM containerregistryngp.dxc.io/appc3:1.0.0  
MAINTAINER Noel Mamoghli – DXC Iberia NextGen  
COPY AppC3 /app/AppC3
```



```
FROM containerregistryngp.dxc.io/formbuilder:1.0.1  
MAINTAINER Javier Meneses – DXC Iberia NextGen  
COPY FormBuilder /app/FormBuilder
```



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FROM containerregistryngp.dxc.io/appc3:1.0.0
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FROM containerregistryngp.dxc.io/formbuilder:1.0.1
MAINTAINER Javier Meneses – DXC Iberia NextGen
COPY FormBuilder /app/FormBuilder

FROM containerregistryngp.dxc.io/svac:1.2.0
MAINTAINER Pedro Bala – DXC Iberia NextGen
COPY SVAC /app/SVAC



01. La Proliferación de Aplicaciones Contenerizadas

FROM containerregistryngp.dxc.io/appc3:1.0.0
MAINTAINER Noel Mamoghli – DXC Iberia NextGen
COPY AppC3 /app/AppC3



```
FROM Jenkins/Jenkins:2.141
MAINTAINER Juan Miguel Garcia - DXC Iberia NextGen

#####
# Install docker
#####
USER root

RUN apt-get update && \
apt-get -y install apt-transport-https \
ca-certificates \
curl \
gnupg2 \
software-properties-common && \
curl -fsSL https://download.docker.com/linux/$(. /etc/os-release; echo "$ID")/ppa > /tmp/dkey; apt-key add /tmp/dkey && \
add-apt-repository \
"deb [arch=amd64] https://download.docker.com/linux/$(. /etc/os-release; echo "$ID") \
$(lsb_release -cs) \
stable" && \
apt-get update && \
apt-get -y install docker-ce && \
wget -q https://www.postgresql.org/media/keys/ACCC4CF8.asc -O - | sudo apt-key add - && \
sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt/ stretch-pgdg main" >> /etc/apt/sources.list.d/pgdg.list' && \
apt-get update && \
apt-get -y install postgresql postgresql-contrib

RUN sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 9DA31620334BD75D9CB94F98818C72E52529D4
RUN sudo apt-get update
RUN sudo apt-get install -y mongod-org

#Add kubect1
RUN sudo apt-get update && sudo apt-get install -y apt-transport-https
RUN curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
RUN echo "deb http://apt.kubernetes.io/ kubernetes-xenial list"
RUN sudo apt-get update
RUN sudo apt-get install -y kubect1

#####
# Configure users, plugins and jobs of Jenkins
#####
COPY /users/ /var/jenkins_home/users/
COPY plugins.txt /var/jenkins_home/plugins.txt
RUN /usr/local/bin/plugins.sh /var/jenkins_home/plugins.txt
```

FROM containerregistryngp.dxc.io/formbuilder:1.0.1
MAINTAINER Javier Meneses – DXC Iberia NextGen
COPY FormBuilder /app/FormBuilder



FROM containerregistryngp.dxc.io/svac:1.2.0
MAINTAINER Pedro Bala – DXC Iberia NextGen
COPY SVAC /app/SVAC



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```
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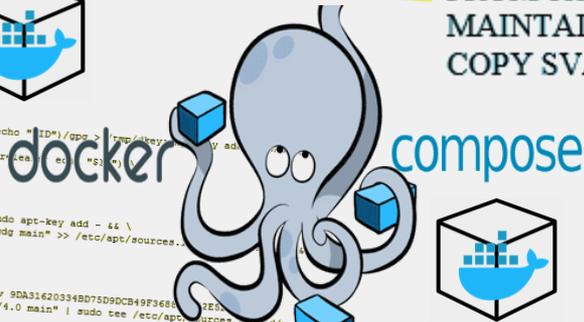
#####
# Install docker
#####
USER root

RUN apt-get update && \
apt-get -y install apt-transport-https \
ca-certificates \
curl \
gnupg2 \
software-properties-common && \
curl -fsSL https://download.docker.com/linux/$(. /etc/os-release; echo "$(ID)/gpg" | tr -d '\n' > /tmp/docker.gpg) \
add-apt-repository \
"deb [arch=amd64] https://download.docker.com/linux/$(. /etc/os-release; echo "$(ID)/gpg" | tr -d '\n' > /tmp/docker.gpg) \
$(lsb_release -cs) \
stable" && \
apt-get update && \
apt-get -y install docker-ce && \
wget -q https://www.postgresql.org/media/keys/ACCC4CF8.asc -O - | sudo apt-key add - && \
sh -c "echo 'deb http://apt.postgresql.org/pub/repos/apt/ stretch-pgdg main' >> /etc/apt/sources.list.d/pgdg.list" && \
apt-get update && \
apt-get -y install postgresql postgresql-contrib

RUN sudo apt-get-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 9DA31620334BD75D9CB9F368A11E4640867E89911BF14A807E89CA5AC9394A38
RUN echo "deb https://repo.mongod.org/apt/debian stretch/mongodb-org/4.0 main" | sudo tee /etc/apt/sources.list.d/mongodb-org-4.0.list
RUN sudo apt-get update
RUN sudo apt-get install -y mongodb-org

#Add kubectl
RUN sudo apt-get update && sudo apt-get install -y apt-transport-https
RUN curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
RUN echo "deb https://apt.kubernetes.io/ kubernetes-xenial main" | sudo tee -a /etc/apt/sources.list.d/kubernetes.list
RUN sudo apt-get update
RUN sudo apt-get install -y kubectl

#####
# Configure users, plugins and jobs of Jenkins
#####
COPY /users/ /var/jenkins_home/users/
COPY plugins.txt /var/jenkins_home/plugins.txt
RUN /usr/local/bin/plugins.sh /var/jenkins_home/plugins.txt
```



FROM containerregistryngp.dxc.io/svac:1.2.0
MAINTAINER Pedro Bala – DXC Iberia NextGen
COPY SVAC /app/SVAC



```
version: '2.0'
services:
  drupal:
    image: drupal:8-apache
    ports:
      - 8090:80
    volumes:
      - /var/www/html/modules
      - /var/www/html/profiles
      - /var/www/html/themes
      - /var/www/html/sites
    restart: always
  postgres:
    image: postgres:10
    ports:
      - 2345:5432
    environment:
      POSTGRES_PASSWORD: *****
      POSTGRES_USER: dxcdevops
      POSTGRES_DB: db_dxcdevops
    restart: always
```



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FROM containerregistryngp.dxc.io/formbuilder:1.0.1
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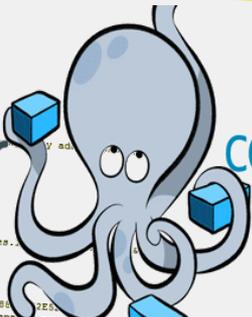
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FROM containerregistryngp.dxc.io/svac:1.2.0
MAINTAINER Pedro Bala – DXC Iberia NextGen
COPY SVAC /app/SVAC

```
FROM Jenkins/  
MAINTAINER Ovi  
#####  
# Install docker  
#####  
USER root  
  
RUN apt-get update && \  
apt-get -y install apt-transport-https  
ca-certificates  
curl \  
gnupg \  
software-properties  
curl -fsSL https://dl.k8s.io/linux/$(uname -r)/deb-archive-$(uname -r).deb && \  
dpkg --get-selections > /dev/null && echo "deb [arch=amd64] https://dl.k8s.io/linux/$(uname -r)/deb-archive-$(uname -r).deb /etc/apt/sources.list.d/kubernetes.list" && \  
apt-get update && \  
apt-get -y install do  
wget -q https://api.postgres.org/media/keys/ACCC4CF8.asc -O - | sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt/ stretch-pgdg main" && \  
apt-get update && \  
apt-get -y install postgresql postgresql-contrib  
  
RUN sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com --recv-keys ACCC4CF8  
RUN echo "deb https://kubernetes.io/apt/debian/ stretch-pgdg main" > /etc/apt/sources.list.d/kubernetes.list  
RUN sudo apt-get update  
RUN sudo apt-get install -y mongod-mongo  
  
#Add subctl  
RUN sudo apt-get up  
RUN curl -s https://raw.githubusercontent.com/RedHat-OpenShift/openshift-ansible/master/roles/openshift_examples/files/ansible-playbook.yml > /etc/ansible/playbook.yml  
RUN sudo touch /etc/ansible/hosts  
RUN echo "deb https://kubernetes.io/apt/debian/ stretch-pgdg main" > /etc/apt/sources.list.d/kubernetes.list  
RUN sudo apt-get update  
RUN sudo apt-get install  
  
#####  
# Configure users, pl  
#####  
COPY /users/ /var/jenkins_home/users/  
COPY plugins.txt /var/jenkins_home/plugins.txt  
RUN /usr/local/bin/plugins.sh /var/jenkins_home/plugins.txt
```

docker compose



```
version: '2.0'  
services:  
  druid:  
    image: ib  
    ports:  
      - 8080:8080  
  postgres:  
    image: postgres:10  
    ports:  
      - 2345:5432  
    environment:  
      POSTGRES_PASSWORD: *****  
      POSTGRES_USER: dxcdevops  
      POSTGRES_DB: db_dxcdevops  
    restart: always
```

```
postgres:  
  image: ib  
  environment:  
    - POSTGRES_USER=taiga  
    - POSTGRES_DB=taiga  
  ports:  
    - "5432:5432"  
  volumes:  
    - /data/drive/docker  
  taigaback:  
    image: ib  
    links:  
      - postgres:postgres  
    environment:  
      - "BASE_DOMAIN=taiga.dxc.com"  
      - "BASE_PROTOCOL=https"  
      - "BACKEND_PORT=8080"  
      - "FRONTEND_PORT=8080"  
      - "EMAIL_HOST=smtp.gmail.com"  
      - "EMAIL_PORT=587"  
      - "EMAIL_HOST_USER=iberianextgen@dxc.com"  
      - "EMAIL_HOST_PASSWORD=*****"  
      - "EMAIL_USE_TLS=True"  
    ports:  
      - "8000:8000"  
  taigaauth:  
    image: ib  
    links:  
      - taigaback:taiga-back  
    ports:  
      - "8080:80"  
    environment:  
      - "BASE_DOMAIN=taiga.dxc.com"  
      - "BASE_PROTOCOL=https"
```

02. Problemática de la Gestión de Contenedores a Escala

FROM containerregistryngp
MAINTAINER Noel Mam
COPY A

opc3:1.0.0

MAINTAINER Pedro Bala

FROM container

.dxc.io/formbuilder:1.0.1

ses - DXC Iberia NextGen

rmBuilder

FROM Jenkins/
MAINTAINER ou

Install docker

USER root

RUN apt-get update && \
apt-get -y install apt-transferr
ca-certificates
curl \
gnupg \
software-proper
curl -fsSL https://li

add-apt-repository \
"deb [arch=amd64]
\$(lsb_release -cs)
stable" && \
apt-get update && \
apt-get -y install do

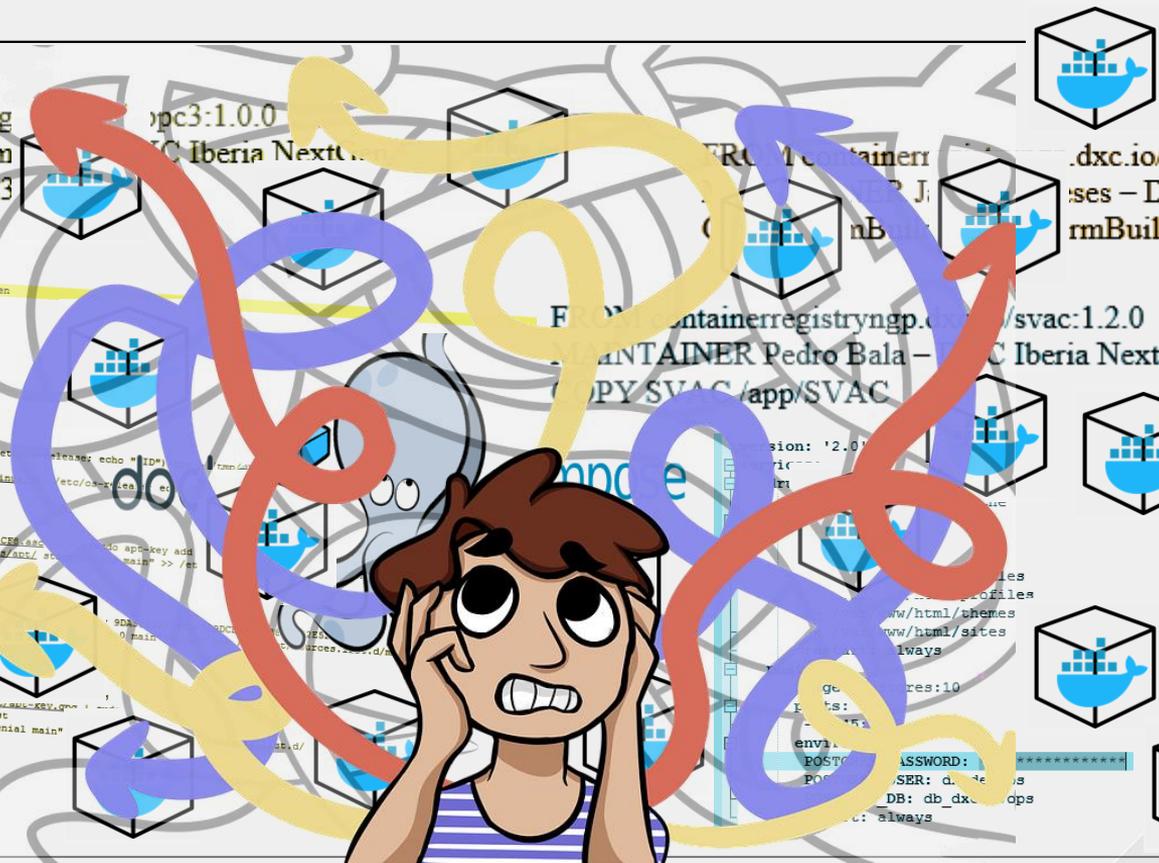
wget -q https://www.postgresql.org/media/keys/ACCC4CF8
sh -c "echo "deb http://apt.postgresql.org/pub/repos/apt/ s
apt-get update && \
apt-get -y install postgresql postgresql-contrib

RUN sudo apt-key adv --keyserver hkp://keyserver
RUN echo "deb https://repo.mongodb.org/apt/debi
RUN sudo apt-get update
RUN sudo apt-get install -y mongodb-org

#Add subclnt
RUN sudo apt-get upd
RUN curl -s https://
RUN sudo touch /etc/
RUN echo "deb https://
RUN sudo apt-get upda
RUN sudo apt-get inst

Configure users, pl

COPY /users/ /var/jenkins_home/users/
COPY plugins.txt /var/jenkins_home/plugins.txt
RUN /usr/local/bin/plugins.sh /var/jenkins_home/plugins.txt



```
postgres:  
  image: iberialnextgen.a  
  environment:  
    - POSTGRES_USER=taiga  
    - POSTGRES_DB=taiga  
  ports:  
    - "5432:5432"  
  volumes:  
    - /data/drive/docker  
taigaback:  
  image: iberialnext  
  links:  
    - postgres:postgres  
  environment:  
    - "BASE_DOMAIN=taiga.dxc.com"  
    - "BASE_PROTOCOL=https"  
    - "BACKEND_PORT=8080"  
    - "FRONTEND_PORT=8080"  
    - "EMAIL_HOST=email.gmail.com"  
    - "EMAIL_PORT=587"  
    - "EMAIL_HOST_USER=iberialnextgen@dxc.com"  
    - "EMAIL_HOST_PASSWORD=*****"  
    - "EMAIL_USE_TLS=True"  
  ports:  
    - "8000:8000"  
taigaauth:  
  image: iberialnextgen.azurecr.io/taiga-multi-  
  links:  
    - taigaback:taiga-back  
  ports:  
    - "8080:80"  
  environment:  
    - "BASE_DOMAIN=taiga.devops-dxc.tk"  
    - "BASE_PROTOCOL=https"
```

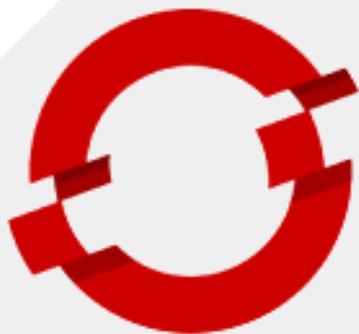

03. La Orquestación como Respuesta



OPENS SHIFT[®]

by Red Hat[®]

03. La Orquestación como Respuesta



OPENS SHIFT[®]

by Red Hat[®]



ONE RING TO RULE THEM ALL

03. La Orquestación como Respuesta



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by Red Hat[®]



03. La Orquestación como Respuesta



OPENS SHIFT[®]

by Red Hat[®]

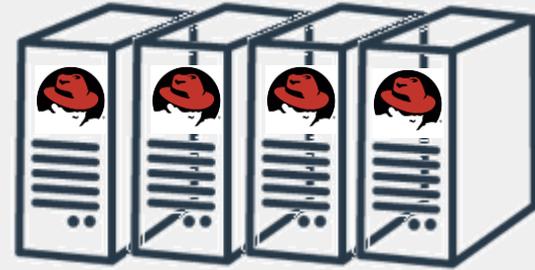


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03. La Orquestación como Respuesta



+75 Nodos



03. La Orquestación como Respuesta

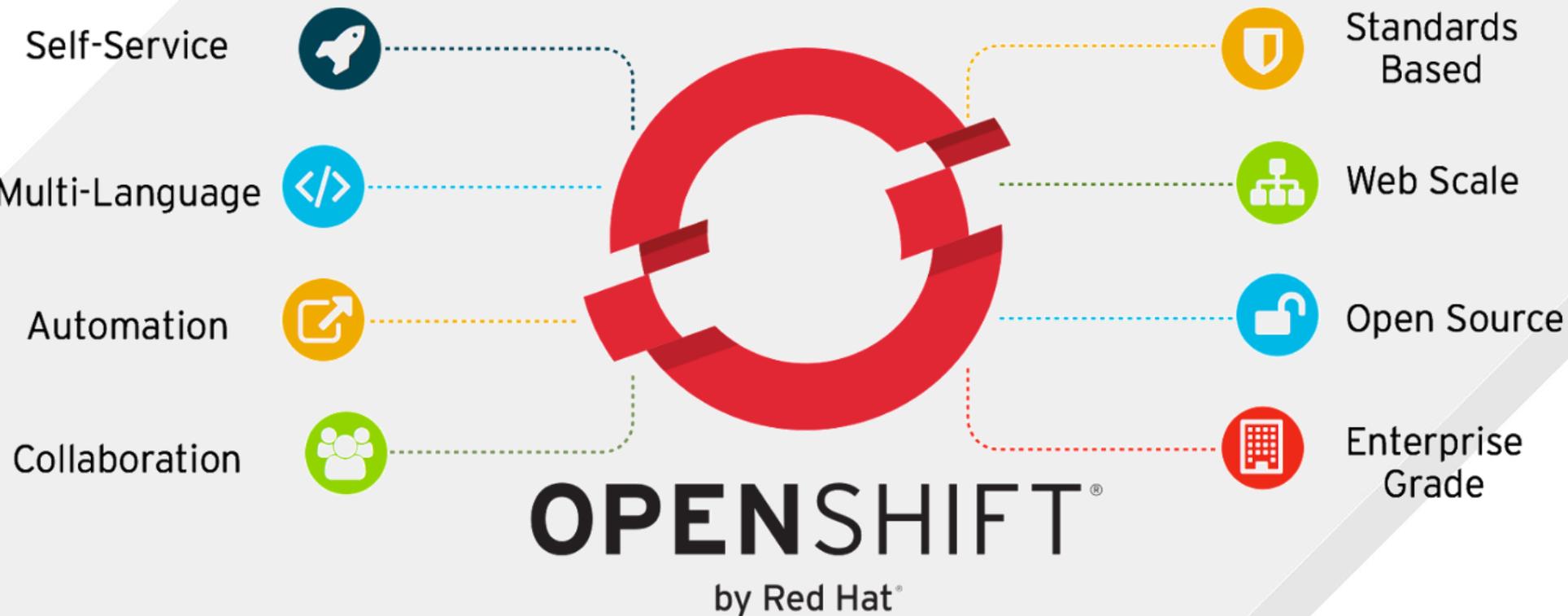


+75 Nodos



+1500 Contenedores

03. La Orquestación como Respuesta



03. La Orquestación como Respuesta



RED HAT[®]
OPENSIFT
Container Platform

03. La Orquestación como Respuesta



RED HAT[®]
OPENSIFT
Container Platform



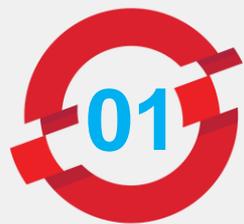
03. La Orquestación como Respuesta



>> **Ciclo de Integración Continua Integrado**

OPENSIFT

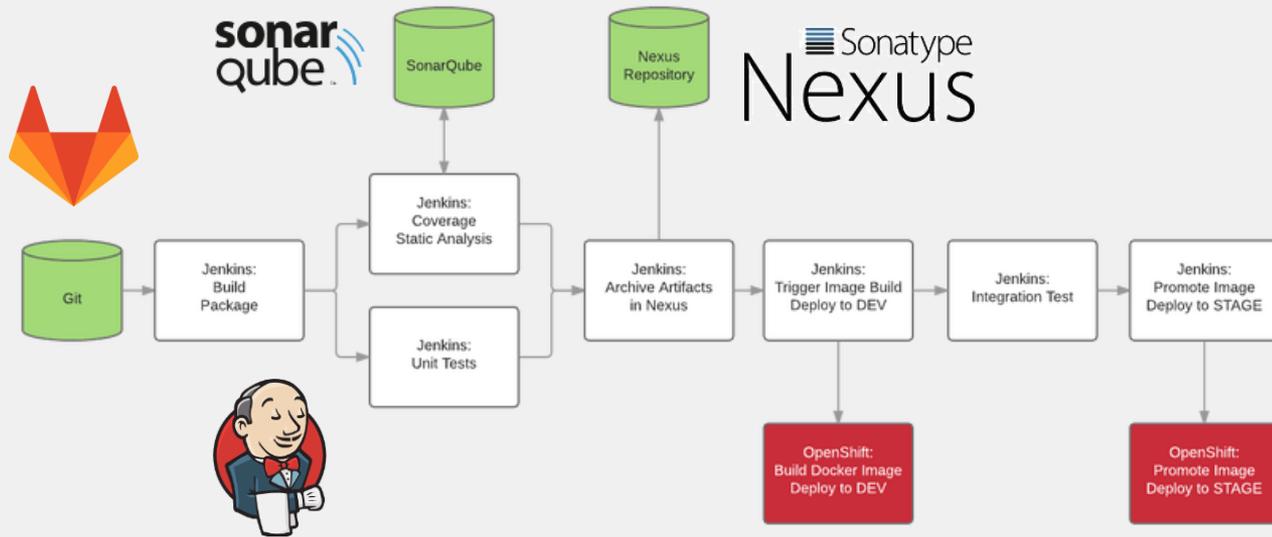
03. La Orquestación como Respuesta



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>> Ciclo de Integración Continua Integrado



03. La Orquestación como Respuesta



>> **Ciclo de Integración Continua Integrado**

OPENSIFT

CI/CD²

03. La Orquestación como Respuesta



>> Consola Web de Gestión

OPENSIFT

03. La Orquestación como Respuesta

OPENSIFT CONTAINER PLATFORM 🔔 ⚙️ 👤 DevOpsDxc

esbpro 🔍 Search Catalog Add to Project

- Overview
- Applications
- Builds
- Resources
- Storage
- Monitoring
- Catalog

APPLICATION
ldap-service <http://ldap-service-esbpro.cloudapps.pre-paa.es/health>

DEPLOYMENT CONFIG
ldap-service, #3

CONTAINERS

spring-boot

- Image: esbpro/ldap-service 6f95a2c 380.3 MIB
- Ports: 8080/TCP (metrics) and 2 others

Average Usage Last 15 Minutes

- 690 Mib Memory
- 0 Cores CPU
- 0.6 Kib/s Network

1 pod

NETWORKING

Service - Internal Traffic
ldap-service
8778/TCP (8778-tcp) → 8089 and 1 other

Routes - External Traffic

- <http://ldap-service-esbpro.cloudapps.pre-paa.es/health>
Route ldap-service-health, target port metrics
- <http://ldap-service-esbpro.cloudapps.pre-paa.es/metrics>
Route ldap-service-metrics, target port metrics

03. La Orquestación como Respuesta

OPENSIFT CONTAINER PLATFORM

esbpro

Search Catalog Add to Project

Quota [Learn More](#)

compute-resources

Limits resource usage within this project.

Scopes:
Not Terminating — Affects pods that do not have an active deadline. These pods usually include your applications.

CPU Request

4 cores

■ Used ■ Available

Memory Request

25 GiB

■ Used ■ Available

CPU Limit

10 cores

■ Used ■ Available

Memory Limit

35 GiB

■ Used ■ Available

Resource Type	Used	Max
CPU (Request)	1300 millicores	4 cores
Memory (Request)	14482931713	25 GiB
CPU (Limit)	8450 millicores	10 cores
Memory (Limit)	23374 MiB	35 GiB

03. La Orquestación como Respuesta



>> Entorno de Herramientas Dinámico

OPENSIFT

03. La Orquestación como Respuesta



OPENSIFT

>> Entorno de Herramientas Dinámico



elastic



fluentd



kibana

03. La Orquestación como Respuesta



OPENSIFT

>> Entorno de Herramientas Dinámico



elastic



fluentd



kibana



cri-o



03. La Orquestación como Respuesta



OPENSIFT

>> Ciclo de Integración Continua Integrado

>> Consola Web de Gestión

>> Entorno de Herramientas Dinámico

03. La Orquestación como Respuesta



OPENSIFT[®]

by Red Hat[®]



Aragonesa de
Servicios
Telemáticos



ferrovial

03. La Orquestación como Respuesta



OPENSIFT[®]

by Red Hat[®]

American Airlines



03. La Orquestación como Respuesta



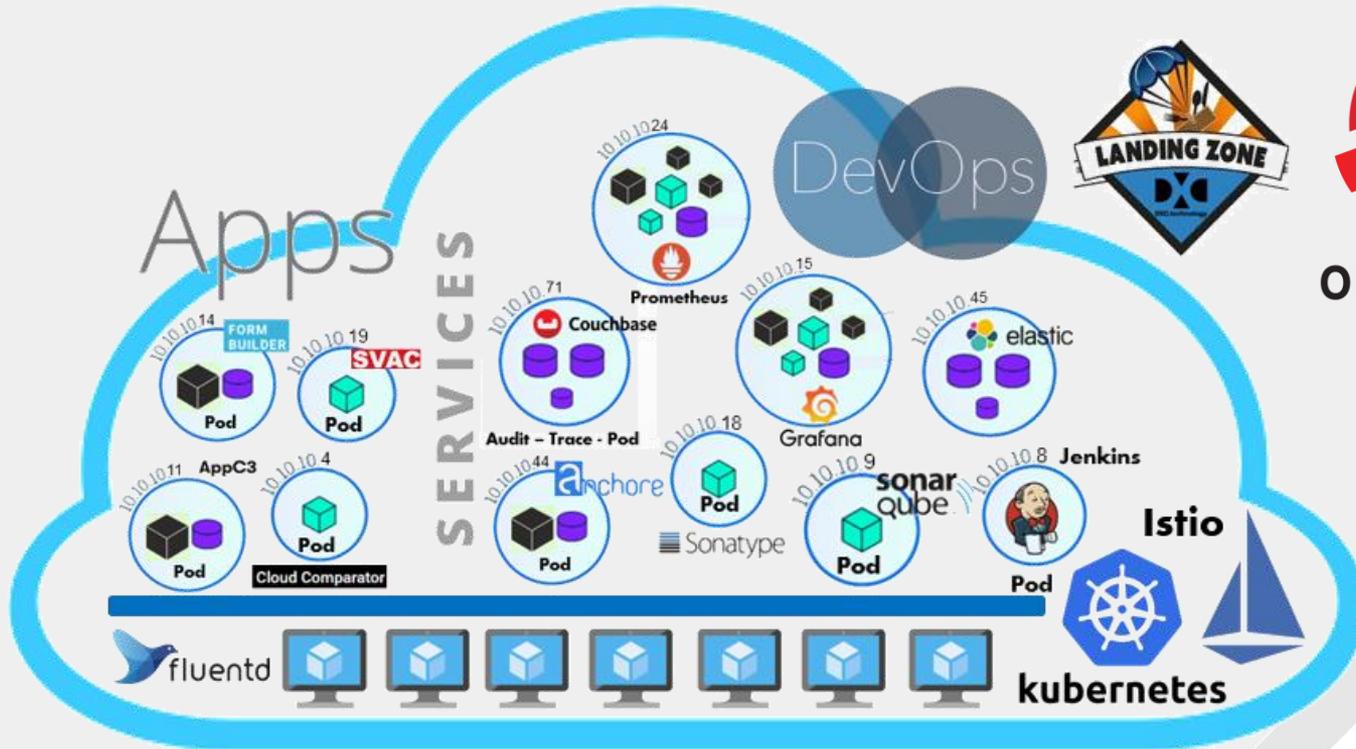
OPENS SHIFT[®]

by Red Hat[®]

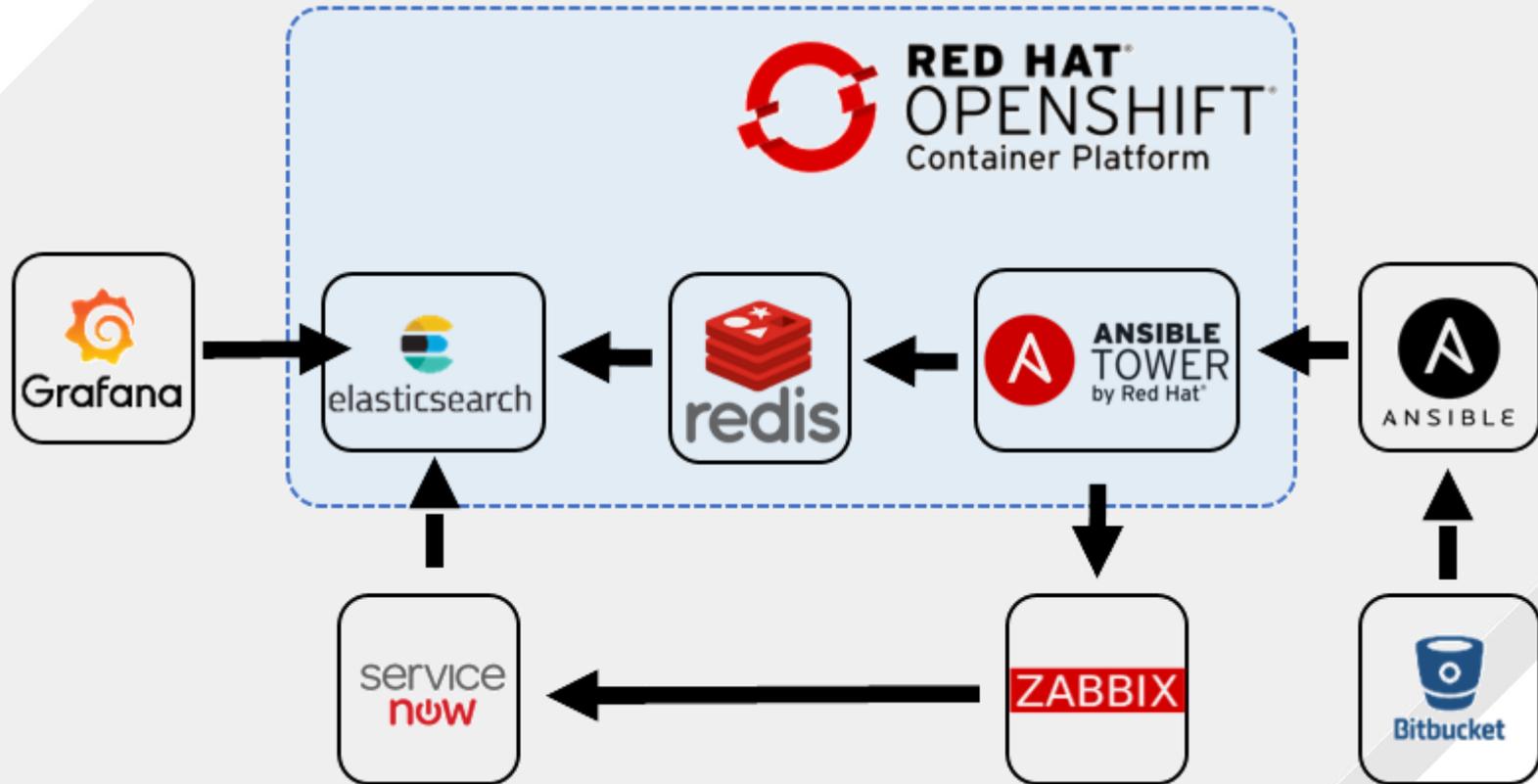


DXC.technology

03. La Orquestación como Respuesta



04. Otras Herramientas para facilitar la Gestión del Entorno



04. Otras Herramientas para facilitar la Gestión del Entorno

DXC Managed Container Platform as a Service



MUCHAS
GRACIAS