binlogic DataOps

" A journey between **infrastructure** and **data** "

JUNE 20-21 2019 WTCBCN

VERON

ARNAUD




Postgres LXC & Docker Containerized Deployment with OpenSVC

Agenda

Use Case

Technologies

- LXC
- Docker
- OpenSVC

Demo / Screencast

Use Case

Postgres Hosting infrastructure (~350 instances ~10 nodes)

Confidential data accessed by thousands people

Production Ready, DRP compliant with 3rd site arbitration

High End storage arrays over stretched san

Synchronous data replication

Containerized deployment (VM-Like with ssh requirement)

Manageability, Reliability, Automated

Technology

LXC

LXC – LinuX Containers

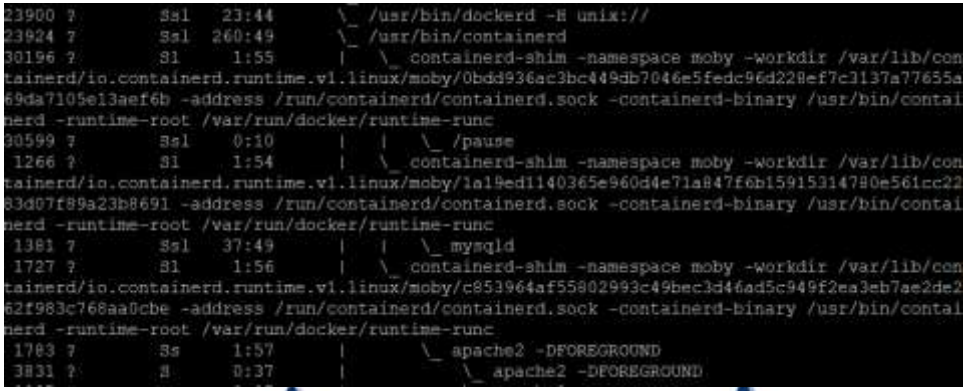
- OS Lightweight virtualization technology
- Do not emulate hardware, share OS kernel with hypervisor
- Dedicated os instance, package db, network stack
- Rely on cgroups to allow resources capping (cpu, mem, io, network, ...)
- Use namespaces for pid, uts for hostname, …
- Can be compared to Solaris Zones or BSD Jails
- Since 2008

Technology

Docker

Docker

- Standardized packaging for software and dependencies
- Apps isolation from each other
- Share same OS kernel
- Use namespace and cgroups
- No guest OS layer to maintain/patch
- Not tied to virtualization solution, but only to docker stack
- Fast, Portable, less deps
- Since 2014 (v1.0)



Technology

OpenSVC

OpenSVC Introduction

OpenSVC is an open source product for managing traditional and containerized applications across multiple hosts

OpenSVC

- Linux, Unix, Windows
- Python Language
- Daemon + Command Set
- Heterogeneous deployment (bare-metal, VM, container, cloud, …)
- Multi datacenters, Inter Continental Cluster
- Service oriented
- Centralized web portal
- Since 2009

OpenSVC – From traditional...

Service Topologies

standalone (quick, easy, systemd alternative)
cluster failover, flex, scaler (manual or automated)

Resources Types

ip, disk, vg, lv, pool, fs, app, sync, task, container

Resources Actions

start/stop/status/restart
scope by family, by tag, up to, down to

Services actions

start/stop/status/restart (easy to delegate)
cli service selector with patterns

- Inventory
- Orchestrate
- Audit
- Monitor
- Alert

OpenSVC – … to Orchestration

Asynchronous target-state driven actions

actions/targets are posted to a daemon listener
and then orchestrated by the cluster daemon monitors

Production ready

quorum arbitration
resilient cluster comms: unicast, multicast, disk, third site relay

DevOps oriented

Templating & (Un)Provisioning features
Rest API
delegate service management and deployment to third party infrastructure through socket (Unix, TLS)

- Provision
- Unprovision
- Automate
- Delegate
- Autoscale

OpenSVC – … to Orchestration

Containers integration

Orchestrate legacy & modern techs :

zones, jails, lxc, lxd, kvm, docker, podman

Enterprise grade Docker registry management

Cluster backend networks (CNI)

Embedded DNS Backend management

L4 & L7 cluster ingress gateways

Meta Service

describe complex application stacks

schedule dependencies between services and subservices

HTTP/2 TLS Socket

Remote management

Provision

Unprovision

Automate

Delegate

Autoscale

OpenSVC as SysOps ⇔ DevOps bridge

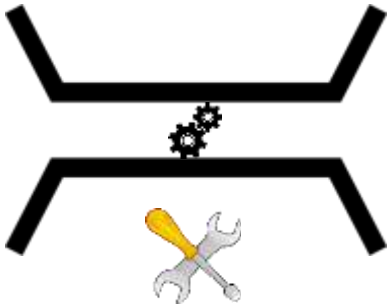
SysOps

Features :

•Deployment procedure
•Infrastructure “as code”

Services types :

•High availability without application collaboration
•Long lifecycle app
•Legacy / Traditional



Clustering Provisioning
Orchestration Automation

DevOps

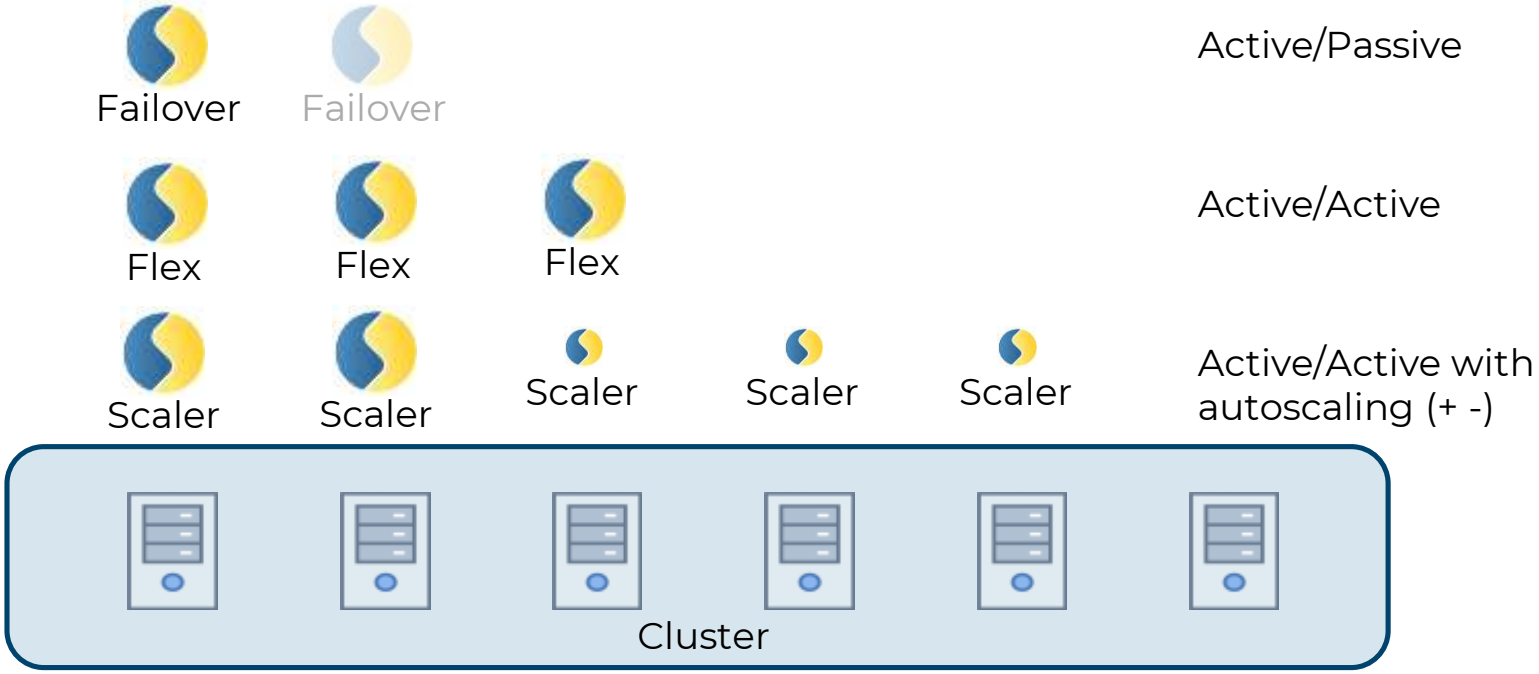
Features :

•Orchestrated deployment
•CI/CD

Services types:

•Native app resiliency
•Dynamic scaling
•Short lifecycle (testing)
•Modern/Stars

OpenSVC – Services Topologies



DEMO

Use case => Template => Deployment (LXC, Docker)

https://github.com/opensvc/dataops2019