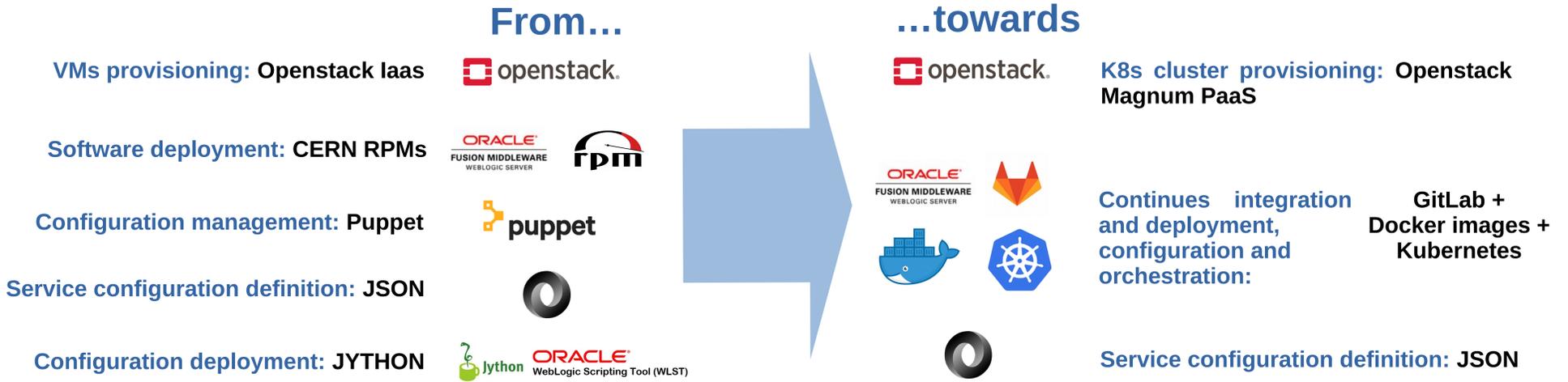


Oracle Weblogic on Kubernetes

Rationale

CERN IT-DB group: WebLogic Domains as a Service

- Over 40 domains
- ~ 500 Oracle WebLogic Servers
- ~ 350 web URL served



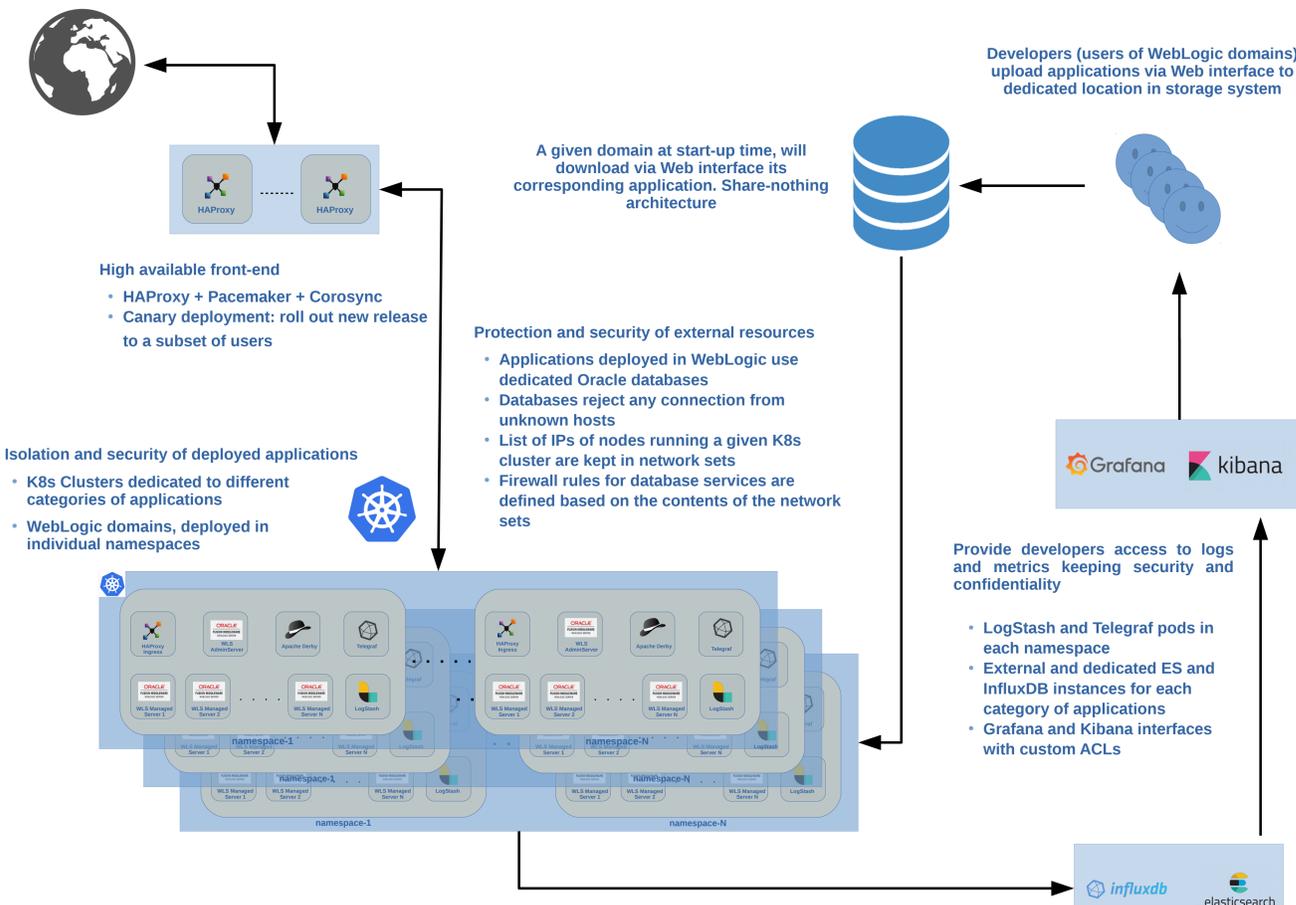
Why WLS on Kubernetes?

- Recoverable
- Faster delivery
- Industry standard
- Easier patching
- Repeatable
- Plug-able
- Portable
- Version controlled



Kubernetes

Architecture



Deployment model

Streamlined production of images with GitLab

- Changes are moderated, controlled and driven by code using merge requests
- Automated build of development, staging and production images
- Maintenance of several versions in parallel
- Storage in the GitLab's integrated image registry



CLI tools for WebLogic domains deployment

- Set of scripted tools to interface with the infrastructure
- Consume from external sources, information like configurations of WebLogic domains and front-end endpoints in JSON format
- Generate description of K8s objects and connect to appropriate Magnum clusters to create/destroy/modify

Challenges

- Cloud provider independent
- Portable deployment
- Pre-configured WebLogic domains included in the Docker images
- Persist specific WebLogic domain configuration in Kubernetes objects
- WebLogic to download deployed application from WebService at start-up time
- Cultural change of containers ecosystem
- No access to particular hosts
- Logging
- Debugging

References

- Antonio Nappi (September 2017, CERN Openlab Open Day) [http://cern.ch/go/WW7B]
- Antonio Nappi & Luis Rodríguez (August 2017, Oracle Bristol Workshop). Oracle on Kubernetes [http://cern.ch/go/SMC8]
- WebLogic on Docker images [http://cern.ch/go/8Spk]
- GitLab CI [https://about.gitlab.com/features/gitlab-ci-cd/]

Future plans

- Evaluate Helm [https://helm.sh/] and GitLab Auto DevOps [https://docs.gitlab.com/ee/topics/autodevops/] for operations and deployment
- Evaluate Traefik [https://traefik.io/] as alternative to HAProxy ingress
- Kubernetes RBAC Authorization [http://cern.ch/go/L96r] to delegate operator role to application developers

