**CERN Web Frameworks strategy:**

“use containers to host everything and to allow widen service options; use OpenShift to orchestrate all.”

**Motivation and Goals**

- **Modernize web central hosting:**
  - Support modern development frameworks
  - Provide more service flexibility
  - Reduce the need for “locally managed” web servers

- **Improve offering of tools to developers:**
  - Make it easier to get started
  - Automate application deployment
  - Integration with code hosting (GitLab)
  - CI/CD pipelines (GitLab/Jenkins)

- **Facilitate deployment and operation of web applications:**
  - Fast prototyping
  - Hosting of central services
  - Self-service templates for application instances
  - Save application manager from having to maintain OS as well
Implementation

• Deployment:
  • RedHat’s PaaS solution based on Docker and Kubernetes: OpenShift v3, Open source version: OpenShift Origin
  • Puppet-managed Openstack VMs, considering deployment on top of Openstack Magnum

• Infrastructure:
  • 27 VMs (2 clusters), 9TB of app volume storage (Cinder, NFS)

• Integration:
  • CERN WebServices: name allocation, management of project ownership and lifecycle, quota management
  • SSO authentication, E-group authorization
  • GitLab for code hosting and CI/CD pipelines
  • CVMFS storage, EOS storage

Use Cases

• Jenkins CI:
  • Self-service instances, Dynamically provisioned container slaves, better flexibility & resource efficiency than VMs

• Deploy 3rd party applications:
  • Off the shelf Docker images or customized for CERN use
  • CERN Central services

• Custom web application hosting:
  • Automated build and deployment from sources in GitLab
  • DBoD service provides databases as needed
  • Development, staging and prod environments
  • Support for multiple frameworks

Future:

• Generic web site hosting:
  • Serve static & CGI content from a shared filesystem (EOS)
  • OpenShift to enable more dynamic scaling, load spread and flexibility than VMs
  • 4000+ sites currently on AFS, 1000+ Drupal websites