OPNFV CI/CD

LFN Developer & Testing Forum 2020
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THE LINUX FOUNDATION

LF NETWORKING

Presentation Overview

- Baseline: Where are we at with CI/CD?
  - What resources do we have?
  - What are we building?
- Establish and Verify Requirements: Where are we going?
  - What do we want to achieve?
  - What's the value in migration?
  - What do other platforms look like?
- Formulate Plan and Execute: How are we going to get there?
  - How long will it take?
  - Who's involved?

Note: Slides will be converted to PDF and added to schedule after the talk.

Baseline

Baseline: Where are we at with CI/CD?

- Builds
  - Total number of jobs: 1887
  - Projects: 14 (active) / 97
  - Repos: 79 (active) / 103

- Hardware
  - 8000+ OpenStack/CloudNative Deployments
  - Online CI PODs: ~12
  - Total Labs: 11+
  - Total Servers: 200+

OPNFV Infrastructure

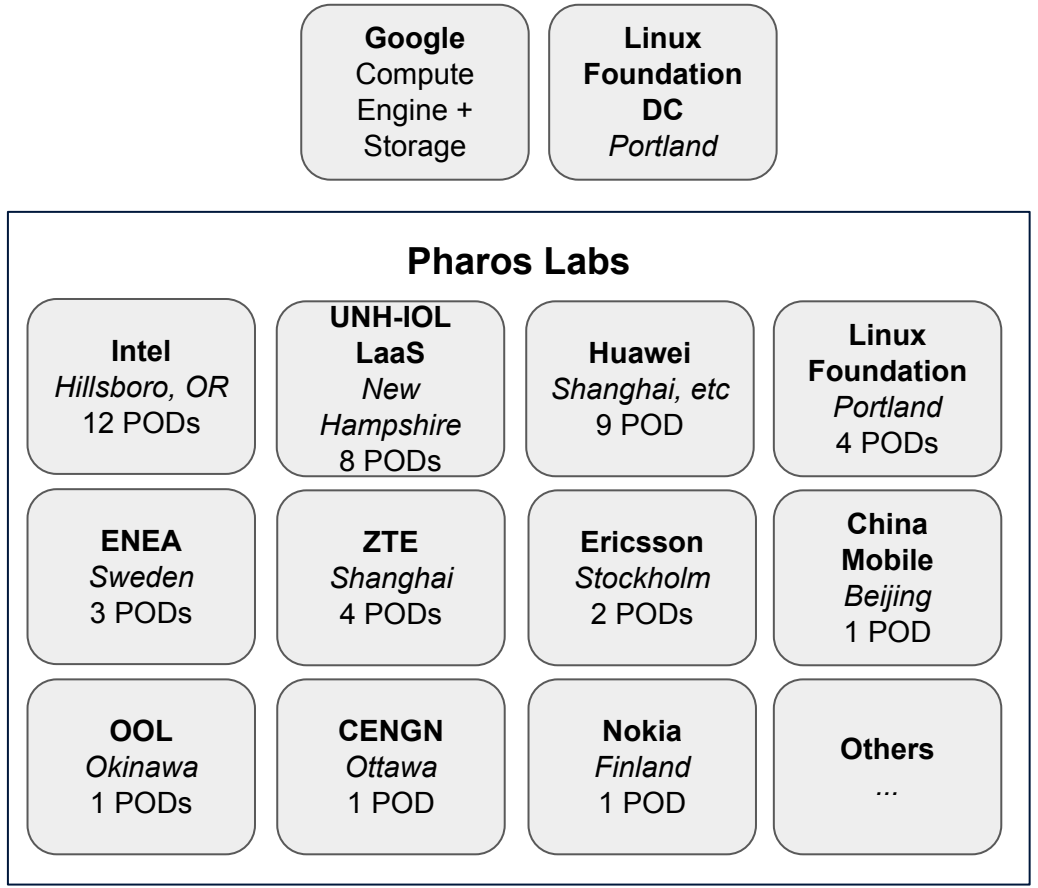
Hosted Services

- Google Compute Engine (GCE) is home to CI and Artifact systems
- Linux Foundation DC (Portland) - 2 racks with 27 servers. Hosts code repositories and LF Lab.

Community Labs

https://wiki.opnfv.org/display/pharos/Community+Labs

- UNH-IOL (New Hampshire) - Lab-as-a-Service (LaaS): 2 racks with 52 servers. Used for adhoc testing and development by OPNFV projects (ONAP through the OPNFV Auto project)
- Intel (Hillsboro) - 72 servers. Used for both CI and development
- Huawei (Shanghai, Munich, Xi'an) - 69 servers
- ZTE (Shanghai) - 30 servers
- Linux Foundation (Portland) - 28 servers
- Ericsson (Sweden) - 18 servers
- ENEA (Sweden) - 18 ARM servers
- CMCC Pharos Lab (Beijing) - 6 servers.
- CENGN (Ottawa) - 6 servers
- Nokia (Finland) - 6 servers
- Okinawa Open Lab (Okinawa) - 6 servers



Baseline: Where are we at with CI/CD?

- Project Verification (Changes, Merges)
  - Build, Test, Publish
- Deployments (Merges, Daily)
  - Build, Deploy, Verify
- NFVI Verification (Daily)
  - Deploy, Verify, Test, Validate

Baseline: Current Problems

- Writing Jenkins Jobs are Hard
  - Steep learning curve
  - Introduces multiple levels of abstraction
  - Documented, but no good summary
- Centralized Job configuration in Releng repository
  - Requires Releng committers to +2
  - Doesn't provide for easy replication
    - Example: Stand-up Jenkins, deploy JJB, add secrets, connect repos, etc..
    - VS. Fork repo, connect CI
- Jenkins requires constant care and feeding
  - Updates for plugins, platform, system

Requirements

Establish and Verify Requirements: Where are we Going?

- Goals of CI Evolution:
  - Easily replicated CI/CD for NFVi
  - Higher level CI/CD
- OPNFV Requirements:
  - Hardware
  - Alignment with LFN
  - Future proofing platform (OpenStack -> Kubernetes -> ???)

Establish and Verify Requirements: Where are we Going?

- Follow through on TSC agreement to TAC Recommendation
- Link to LFN Infra-WG Comparisons
- Potential Migration Benefits:
  - Repository coupled with CI jobs, easy to replicate
  - Less time spent on infra tasks
  - Easier usage / understanding of CI
- Drawbacks:
  - Disruption to current workflows
  - Focus on CI and not development
  - New tools require training and time to learn
  - Restricted by the CI Platform features

Planning

Formulate Plan and Execute: How are we going to get there?

- Plan:
  - Write-out and Verify Platform Requirements
  - Finalize POCs & Present Decision and Request to TSC
  - Establish Timeline and Expectations
  - Migrate Projects (not en-masse)
- Execute:
  - Possible Target: Jerma Release (June-July)
  - Who: Community, Releng, Infra-WG

Open Questions from POC Work

- Gitlab
  - Github PRs from forked repos don't trigger Gitlab-CI Pipelines
    - Options:
      - Migrate to Gitlab (instead of, or after, Github)
      - Run PR bot
  - Gitlab CLA workflow not available till March
- How to get hardware enrolled in new system?
- What happens to Releng if jobs in repos?

Discussion + Q&A

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Appendix

Types of Jobs

- Verify / Merge / Daily
- Installer / Scenario
- Docker
- Documentation
- Generic (yamlint, tox, pylint)
- Administration (cleanup, backups, auditing)
- Community Automation (Releases, INFO.yaml, Artifact site)

Phase 1 (No-Op CI / Docs)

- Availability
- Edgecloud
- FDS
- IPv6
- OPNFV TSC
- OVNO
- Pharos
- SampleVNF
- SDNVPN
- Stor4NFV
- VES

Phase 2 (Independents)

- OPNFV Docs
- Snaps
- Calipso
- KVMForNFV
- LaaS
- VSwitchPerf
- Dovetail Webportal

Phase 3 (Installers & Verifiers)

- Fuel
- Airship
- Functest
- Yardstick
- Dovetail
- XCI

Phase 3 (Installer Dependents)

- Barometer
- Bottlenecks
- Clover
- Container4NFV
- CPerf
- Doctor
- NFVBench
- ONOSFW

Phase 4 (Full CI/CD)

- Deploy + Verify + Test + Compliance
  - Airship
  - Apex
  - Dovetail
  - Fuel
  - Functest
  - XCI
  - Yardstick

Phase 5 (Release & Automation)

- Cleanup Scripts
- Backups
- Auditing & Scanning