OPNFV CI/CD

LFN Developer & Testing Forum 2020
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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
- 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

Linux Foundation
- DC Portland

Google Compute Engine + Storage

Pharos Labs

Intel
- Hillsboro, OR
- 12 PODs

UNH-IOL LaaS
- New Hampshire
- 8 PODs

Huawei
- Shanghai, etc
- 9 POD

ZTE
- Shanghai
- 4 PODs

Ericsson
- Stockholm
- 2 PODs

ENEA
- Sweden
- 3 PODs

CENGN
- Ottawa
- 1 POD

Nokia
- Finland
- 1 POD

OOL
- Okinawa
- 1 POD

China Mobile
- Beijing
- 1 POD

Others
- ...

Linux Foundation
- Portland
- 4 PODs

Okinawa Open Lab
- 1 POD
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
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