QA and Testing

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QA and Testing

Agenda

• Introduction
• Framework Overview
• Test Suites
• QA Jenkins
• Setup/Run Tests
• Collaborations
• Contribution Opportunities
Introduction

Need for a Framework

CORD involves validating several components
Introduction

Automation Framework

• Test Automation Framework (cord-tester)
  • collection of several test tools
  • deployed in containers
  • creates interfaces to simulate edge traffic
  • can be installed on PODs/VMs
  • Several flavors of tests can be achieved
    • functional, container related, sanity, API, data plane, performance/scale, end-end
Automation Framework
Tool Set/Architecture

**SETUP**
Manifest files, Config, Install, Docs

**CORE**
Framework, Utils, Logs

**MODULES**
vSG, XOS, Fabric
vRouter, ONOS Apps
Performance, Voltha

**TOOL SET**
Robot Framework, Nose, Docker, Scapy, Pipework, Ansible Playbook

**TESTS**
Test Environments

Tests/TestBed

PODs
- Build and Deploy nightly
- Configure POD
- Post Install Verification
- All test suites

Cord-in-a-Box
- Build and Deploy nightly
- Control and Data Plane
- Full API Tests

Virtual Environment
- Build R-CORD, M-CORD, E-CORD virtual profile (commit based)
- Repo based tests
- Sanity tests
- Unit Tests
Test Suites

Categories of Tests

- Tests on PODs
- Control Plane
- Data Plane
- API
- Quick Sanity Tests
- End-End
Test Suites

Testing PODs

• Validating PODs
  • Post installation configuration scripts
  • Sanity end-end checks
    • pings between nodes, fabric
    • health checks in onos apps and logs
    • status checks on openstack lxc containers
    • validate MAAS services and container states
    • validate services on fabric
    • validate profile specific service service containers
    • control plane
Test Suites
Control Plane

• Validates XOS control plane operations
• Validates on both PODs and virtual environments
• Tests are run using RobotFramework and Python
• Currently tests available for R-CORD
Test Suites
Data Plane

- Validates data plane operations
- Tests available for CiaB
- Tests are run using Nose Framework and Python
- Currently automated tests available for R-CORD only
Test Suites
Container Based

- Tests run using ansible playbook
- Deploys virtual profiles (R-CORD, M-CORD, E-CORD)
- Quick validation on containers health
- Error checks in the logs
Test Suites

API Related

- XOS REST API tests (all environments)
- XOS gRPC APIs (virtual environments)
- Sanity API tests run for every commit on certain repos
QA Jenkins

Builds and Tests
QA Jenkins Environment

- Gerrit Repos
- Confluence
- Jenkins
- Cord-tester (VM)
  - Virtual Profiles (Sanity Tests)
- Cord-in-a-Box (Cord-tester)
- R-CORD
- M-CORD
- E-CORD (cord-tester)
Jenkins Environment

Jobs

• Jenkins jobs are run on various platforms
  
  https://jenkins.opencord.org/view/QA/
  
  • VMs
    • job triggered by every commit on the repos
    • builds virtual profiles and validates sanity/API based tests
  
  • PODs
    • builds nightly on PODs and runs all available tests
    • R-CORD, E-CORD (global and local), M-CORD
  
  • CORD-in-a-Box
    • Builds nightly on a physical node and runs all available tests
Setup and Run Tests

Example

Test#: Create a subscriber using XOS(with specific s_tag and c_tag) and then validate the data plane connectivity for the created subscriber
Example
Setup and Run Tests

• Setting up the test environment
  • git clone https://gerrit.opencord.org/cord-tester
  • sudo ./src/test/setup/prerequisites.sh --cord

• Create test container
  • sudo ./cord-test.py setup -m manifest-cord.json

• Control Plane test to create subscriber
  • From `cord-tester/src/test/cord-api/Tests` directory
  • Run pybot Ch_SingleInstanceTest.txt

• Validate the data plane connectivity
  • nosetests -v vsgTest.py:vsg_exchange.test_vsg_for_external_connectivity
Community Collaborations

Contributions

- **Ciena**
  - “cord-tester” framework initiation
  - data plane framework
  - automated few functional tests for R-CORD and Voltha

- **Radisys**
  - Automated sanity tests for PODs

- **Spirent**
  - POD for R-CORD/M-CORD tests
  - Traffic emulation for R-CORD functional scenarios
  - M-CORD functional scenarios
Community Collaborations

Contributions

• Intel/Ixia/Netronome
  • Performance tests using Intel EPC

• Flex
  • PODs for test
  • Functional scenarios for R-CORD

• QCT
  • PODs for deployments and tests
Community Collaborations
Community Help

QA Contribution Opportunities

• Performance/Scale
  • Measure and benchmark performance numbers in multiple areas of CORD
• E-CORD
  • Automation framework development
  • End-end Test development
• M-CORD
  • Automation framework development
  • End-End Test development

=> For more details and questions, please drop by the ONF QA kiosk desk
QA and Testing

Thank You