Introduction to ONOS Brigades

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ONOS/CORD WG Meetup

Agenda

- Introduction to Brigade Model
- ONOS Brigades in 2016
- ONOS Brigades in 2017
- How to Get Involved in ONOS Brigades

Introduction to Brigade Model

Introduction to Brigade Model (1/2)

- Motivation
  - ONOS community continues to grow
  - Challenges of how to coordinate a large group to make sure we're all working toward a shared goal
- Solution
  - Communicate clearly about ONOS vision
  - Invite people to work together on completing specific parts of the vision
- Brigade Model
  - Create small teams around specific features that core team want to ship in upcoming version of ONOS

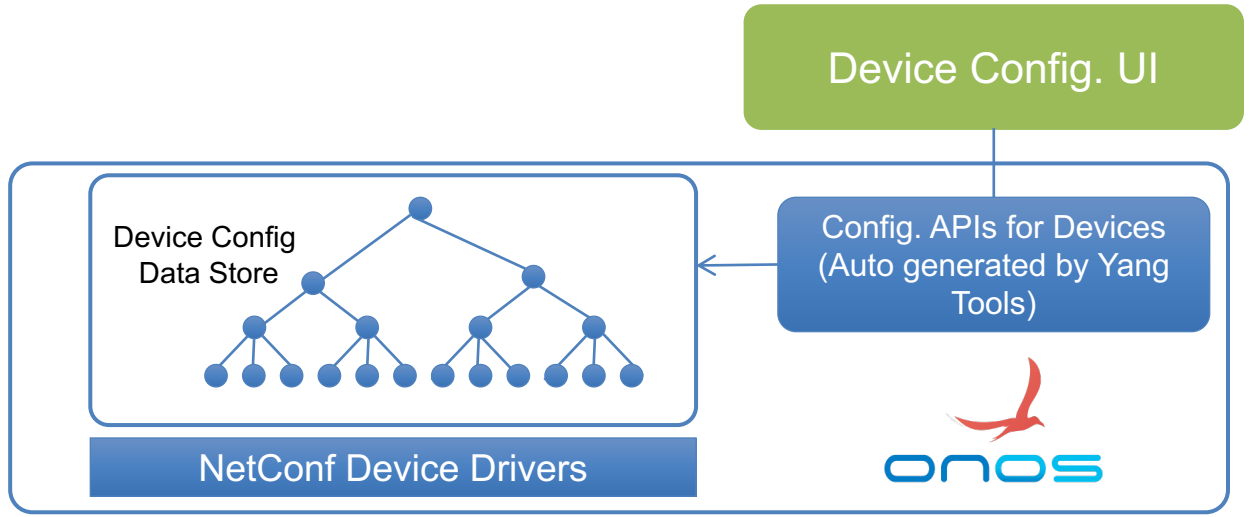
Introduction to Brigade Model (2/2)

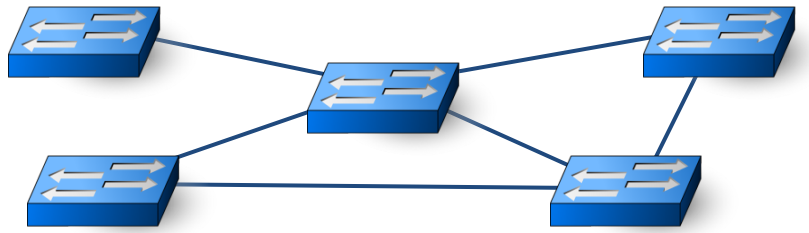
- Benefits of Joining a Brigade
  - Opportunity
    - Unique opportunity to work with the core engineering team
    - Participate in work onsite at Menlo Park
  - Recognition
    - Showcased widely with the community both online as well as at events
  - Experience
    - Get experience in network engineering
    - A great stepping stone to possibly work at ON.Lab or other member organizations
  - Acceleration
    - Get work that you care about into an official ONOS release much more quickly
  - Funding
    - ON.Lab provides budget for teams to work with the core engineering team

ONOS Brigades in 2016

Dynamic Configuration

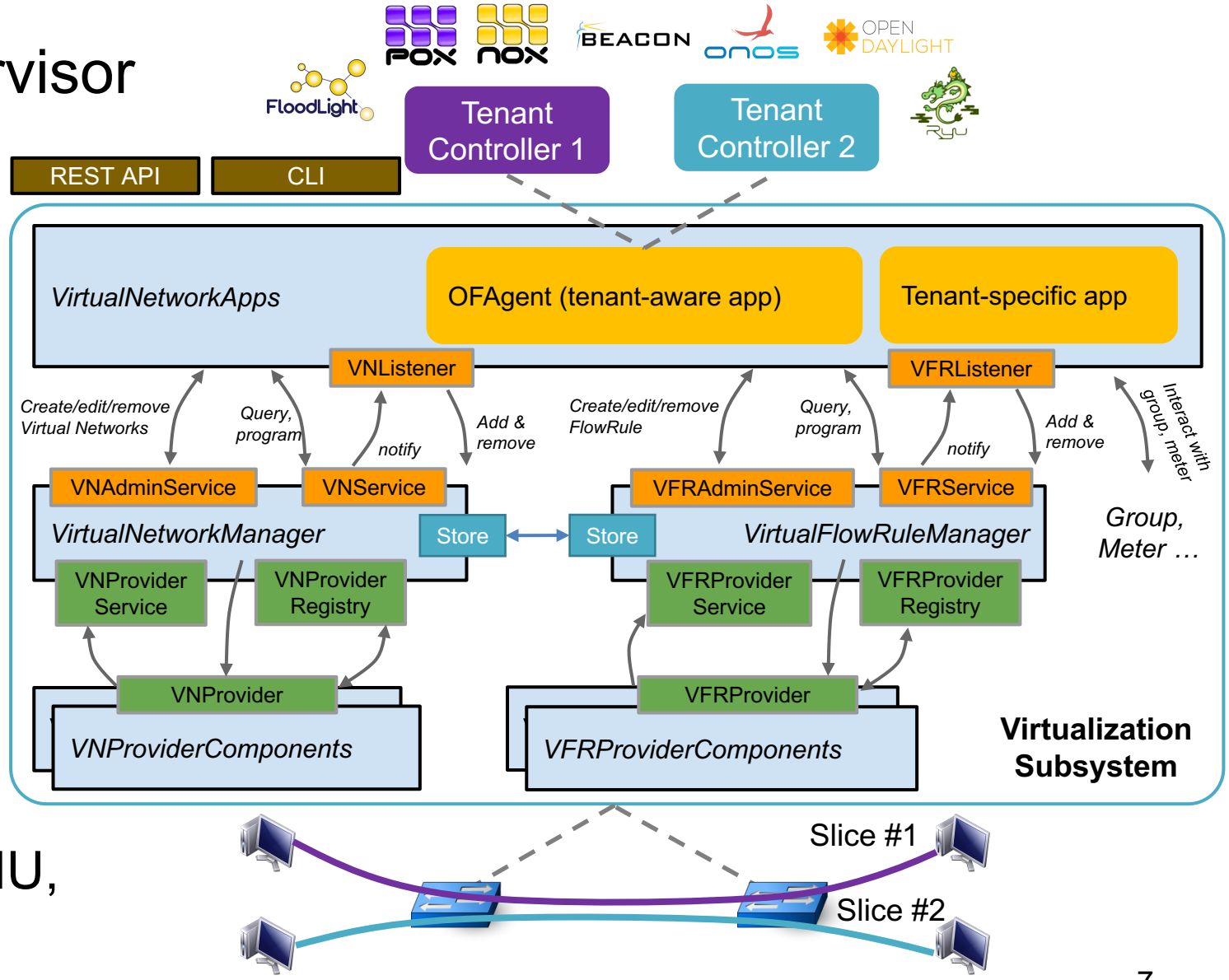
- Introduce model-driven configuration capabilities
  - Enable a network operator to seamlessly bring up/down and configure devices from different vendors and to verify the configuration
- Benefits
  - Network operators
    - Significant OPEX savings and vendor independence
  - Vendors
    - Faster integration of its products
    - into operators' networks
- Team
  - Leader: Patrick Liu
  - Members: Gigamon, Fujitsu, Huawei, ON.LAB, Verizon





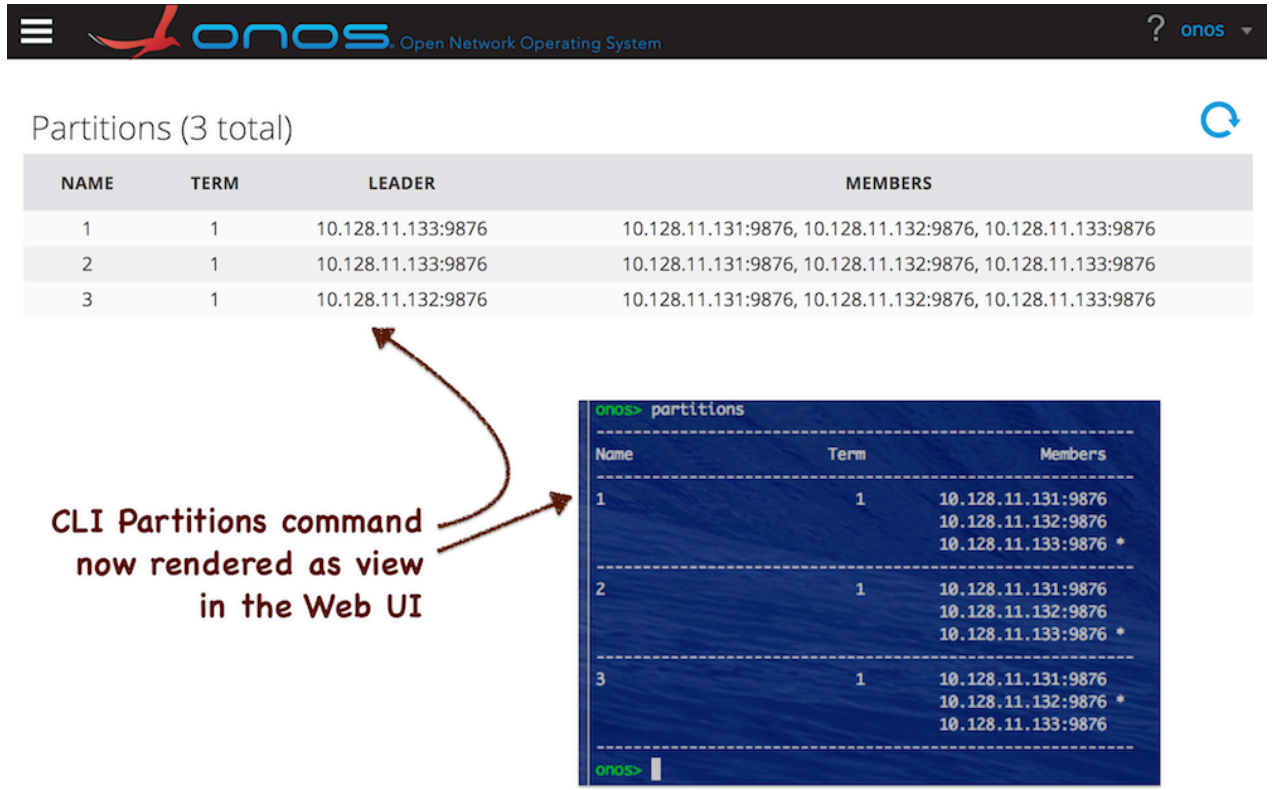
Network Virtualization

- ONOS as a Network Hypervisor
  - OpenVirteX (OVX) model, aimed at virtualization for off-platform apps
- Virtualization
  - Topology virtualization
    - Arbitrary topologies from Big Switch to isomorphic
  - Address virtualization
    - VLAN, IP rewriting, tunneling
- Team
  - Leader: Ali Al-Shabibi
  - Members: Avaya, Ciena, KHU, POSTECH, SK Telecom



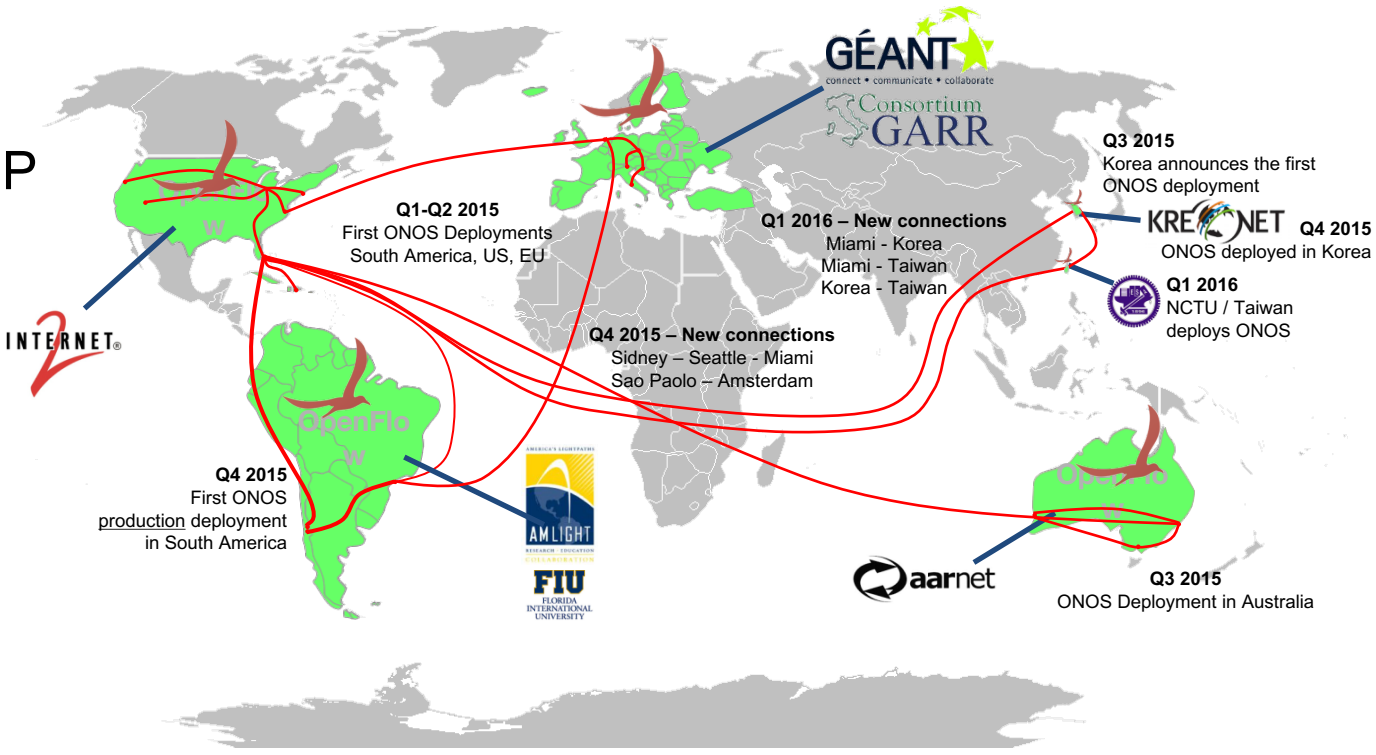
GUI Scalability

- Objective
  - Incremental improvement of ONOS Web UI
- Scope
  - Short term
    - Implement region-aware topology, intents view
    - Enhance table views
  - Long term
    - Indexed-global search subsystem
    - Re-implement “dark” theme
    - Implement partition view
- Team
  - Leader: Simon Hunt
  - Members: Villa-Tech, Verizon, Huawei



Deployment

- Objective
  - Create a concrete stack of software that can be deployed in networks
  - The stack provides Layer 1-3 functionalities
- Scope
  - Short term
    - Provision L2, L3 service via SDN-IP
    - Refactor ProxyARP application
  - Long term
    - Integrate E-CORD and VPLS
    - More deployment activities
- Team
  - Leader: Luca Prete
  - Members: AmLight, GEANT, NCTU, KISTI, ZTE, etc.



ONOS Brigades in 2017

Intent Subsystem 2.0

- Based on Networks Comprising of Regions with Different Technologies & Limitations
  - Different regions of network can use different means to satisfy an intent
  - Multiple intent domains within a single administrative domain
- Offers Composable Network-centric Primitives
  - E.g., Tunnel, default route, {broad | multi | any}cast
  - Efficient use of network resources via shared use of primitives
- Offers Apps to Negotiate/Select from Alternatives
  - Presently only one intent “solution” is implicitly selected
- Team
  - Leader: Brian O’Conner
  - Members: Fujitsu, ON.LAB

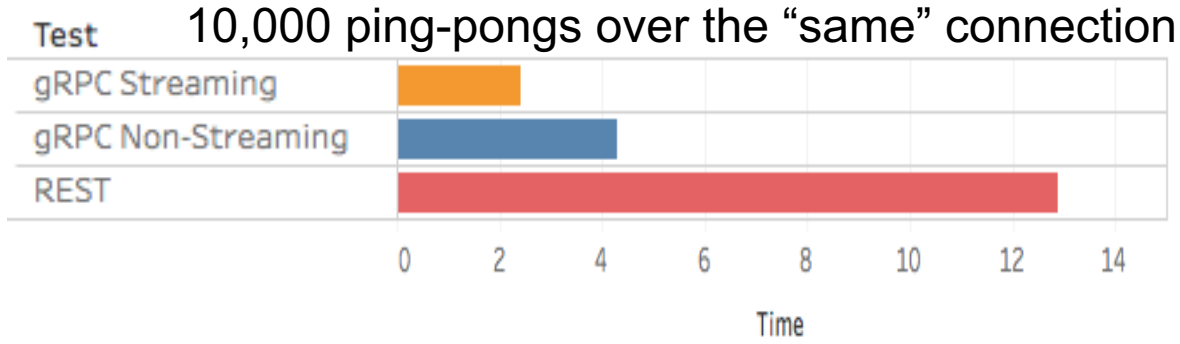
SDN/ONOS Training

- Objective
  - Provide and re-organize open source teaching materials in different levels
    - Beginner, network engineer, developer
- Scope
  - Short term
    - Start with the designing of three training levels
  - Long term
    - Propose a DEMO server with testbed and DEMO accounts
    - Go in depth for the intermediate and advanced levels
    - Provide certification services and open source training materials

- Team
  - Leader: Abdulhalim
  - Members: DTU, Politecnico di Milano, UPMC, Universita di Pisa, Verizon, ONF, Strategic Virtualization, ON.LAB, NCTU, Politecnico di Torino, etc.

gRPC NBI

- Objective
  - Allow high-performance interactions with off-platform applications
  - A better replacement of REST
    - gRPC: Protobuf over HTTP/2 POST
    - REST: JSON over HTTP 1.1
- Scope
  - Support gRPC as a NBI
  - Create handcrafted message types to provide access to system services
  - Enable gRPC for East/West communication
- Team
  - Leader: Aaron Kruglikov
  - Members: POSTECH

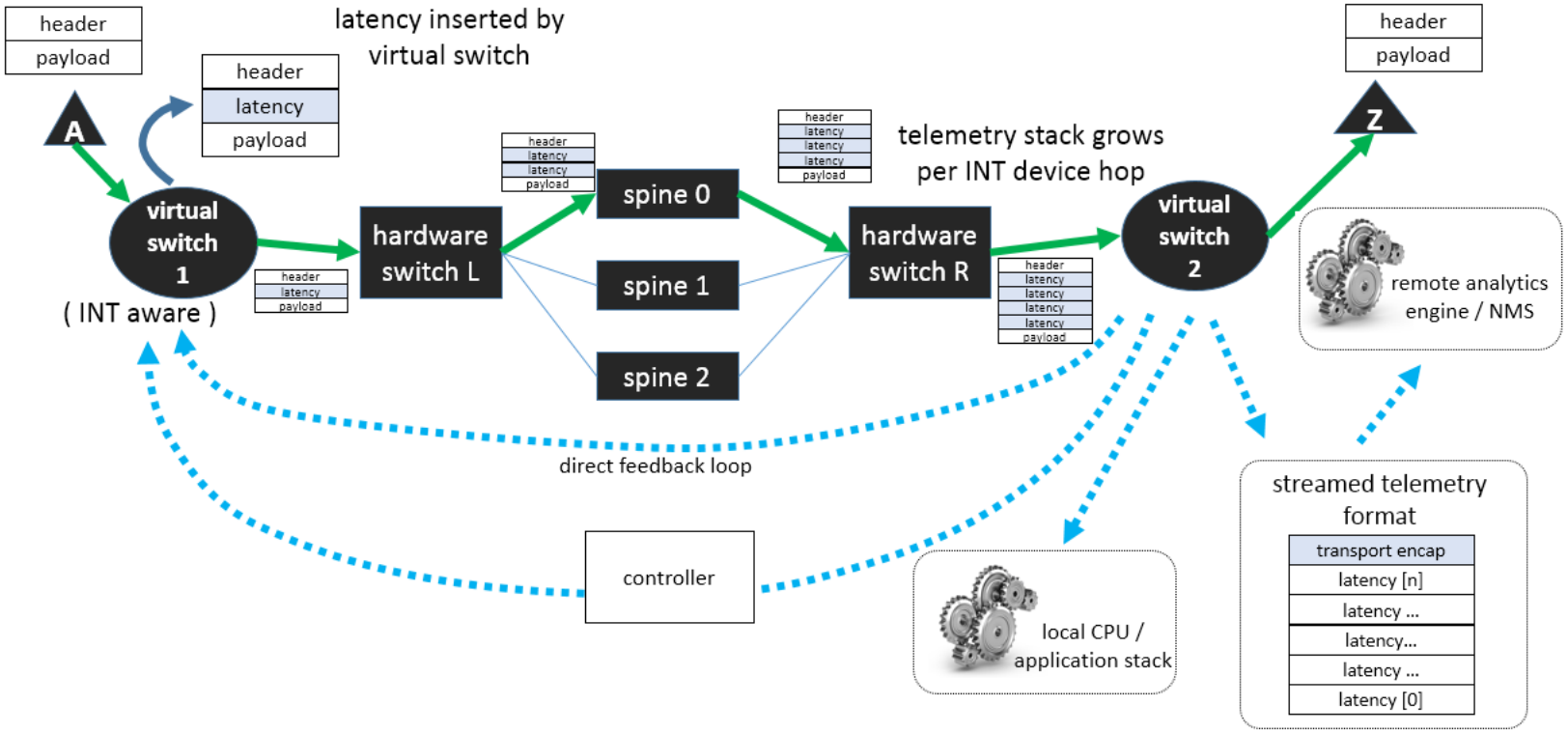


Build and Package Infrastructure

- Objective
  - Tools and processes for building ONOS and publishing the artifacts
- Scope
  - Codebase can be built efficiently, reliably and consistently into a small artifacts
    - Deb, RPM, docker, snap, Ansible, Puppet, etc.
  - Maintain developer SDN document
  - Integration of CI with basic functionality tests (STC) as part of build
  - Maintain and upstream Gerrit plugins (Module Owner, Stats, etc.)
  - Develop and maintain ONOS archetypes (MAVEN + BUCK)
  - Deprecate and remove legacy build framework
- Team
  - Leader: Viswa KSP
  - Members: Alexis Munyandekwe

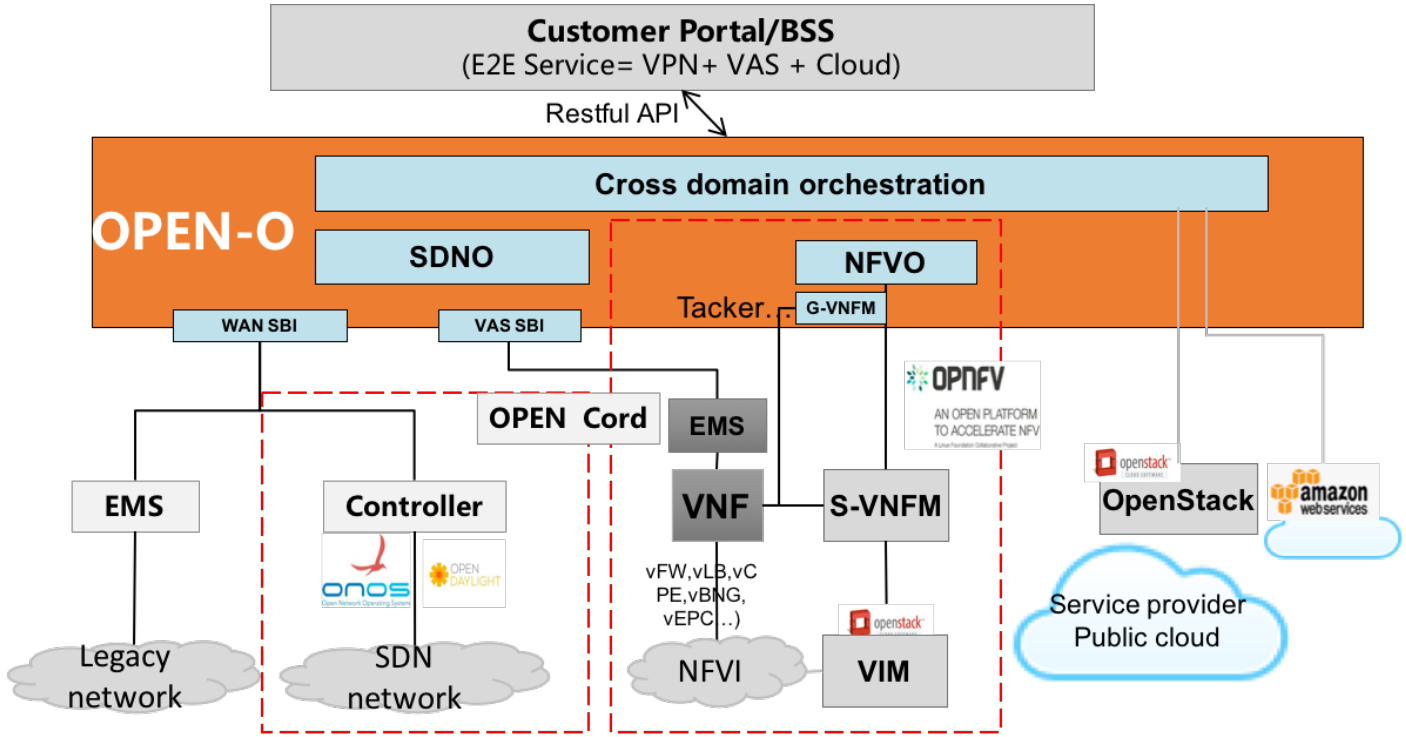
P4

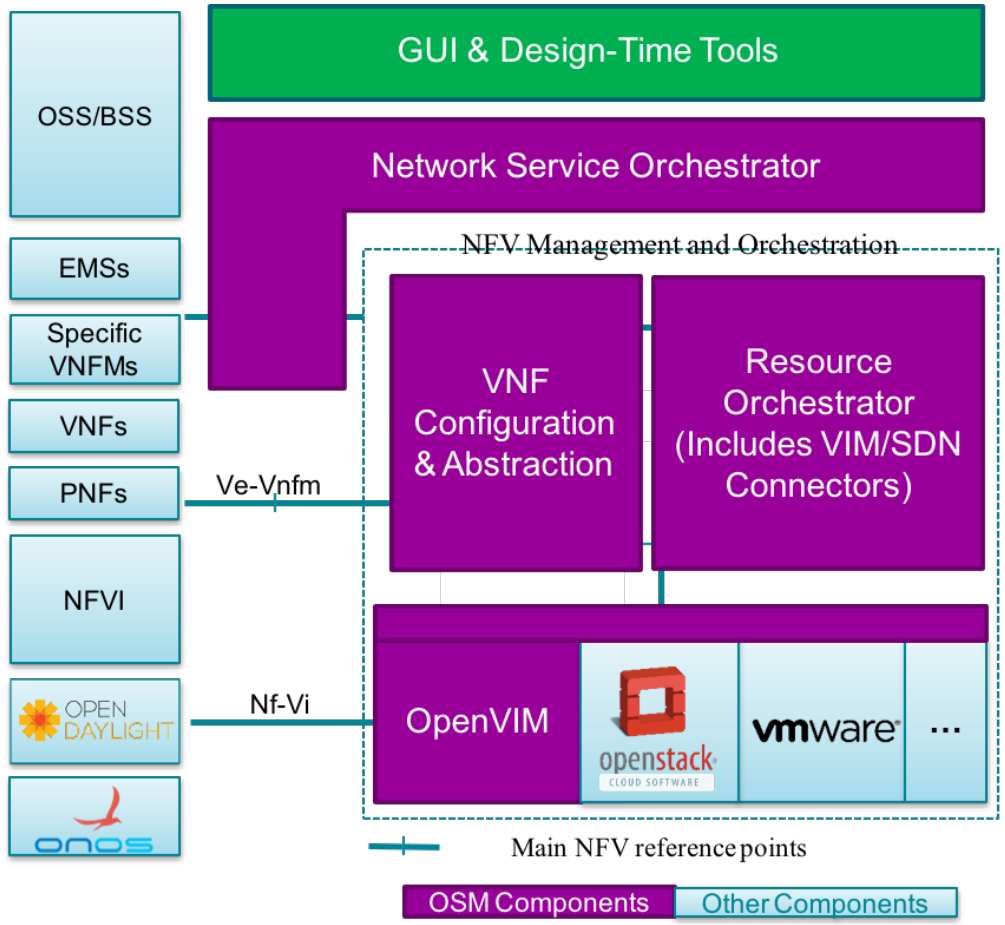
- Objective
  - Support awareness of P4 programs including ability to deploy them
  - Facilitate applications to interact with the program-specific abstractions and controls
- Possible Items
  - In-band Network Telemetry (INT)
  - Etc.
- Team
  - Call for Proposal



ECOMP/Mano/Open-O Integration

- Objective
  - Integrations with various orchestrator platforms
- Team
  - Call for Proposal





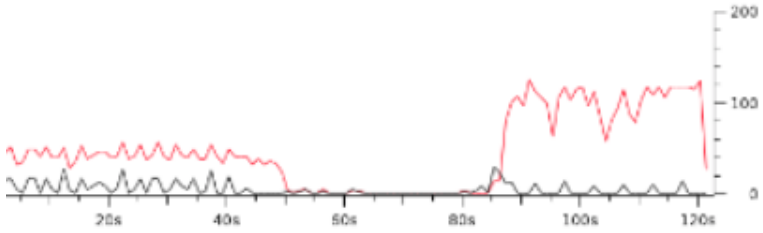
Internationalization/Localization

- Objective
  - Develop a framework for localization of the GUI and produce a set of localized message bundles
  - Localize ONOS documents
    - Training material, white papers, etc.
- Possible Items
  - Develop a localization framework
  - Translate message and documents
- Team
  - Leader: Elisa
    - On hold for now
  - Members: Call for Participation

Security and Performance Analysis

- Objective
  - Assess controller robustness against network and system attacks
  - Assess controller performance in case of software and network failures
  - Identify countermeasures to cope with attacks and bugs against weak software elements
  - Compare ONOS controller to other equivalent controllers in terms of network and system performance

- Team
  - Leader: Stefano Secci (UPMC)
  - Members: Nokia France, Polimi Italy, Huawei Germany



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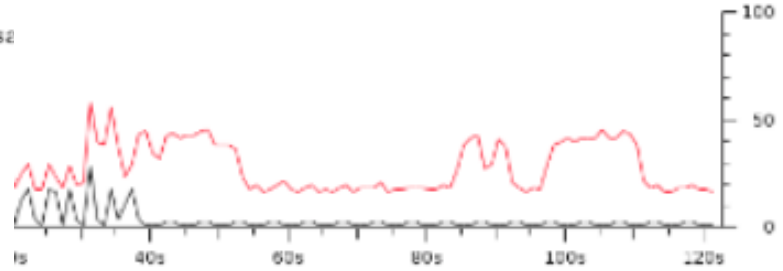

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How to Get Involved in ONOS Brigades

How to Get Involved in ONOS Brigades

- Procedures of Leading a New or Existing Brigade
  - Write a proposal send to David Boswell
  - Proposal will be reviewed and approved by the ONOS TST
  - Find more brigade members to form a team
  - Start to lead the brigade

- Procedures of Taking Part in a Brigade
  - Directly get in touch with either brigade leader or me (Jian)

- Contact Information
  - Jian Li: jian@onlab.us
  - David Boswell: david@onlab.us