



# OPNFV

IPv6 Project

Graduation Proposal

OPNFV IPv6 Project Team

12/19/2017

# Agenda

- IPv6 Project Introduction
- Achievements
- Metrics
- Future Plan



# IPv6 Project Introduction

- Key Project Facts

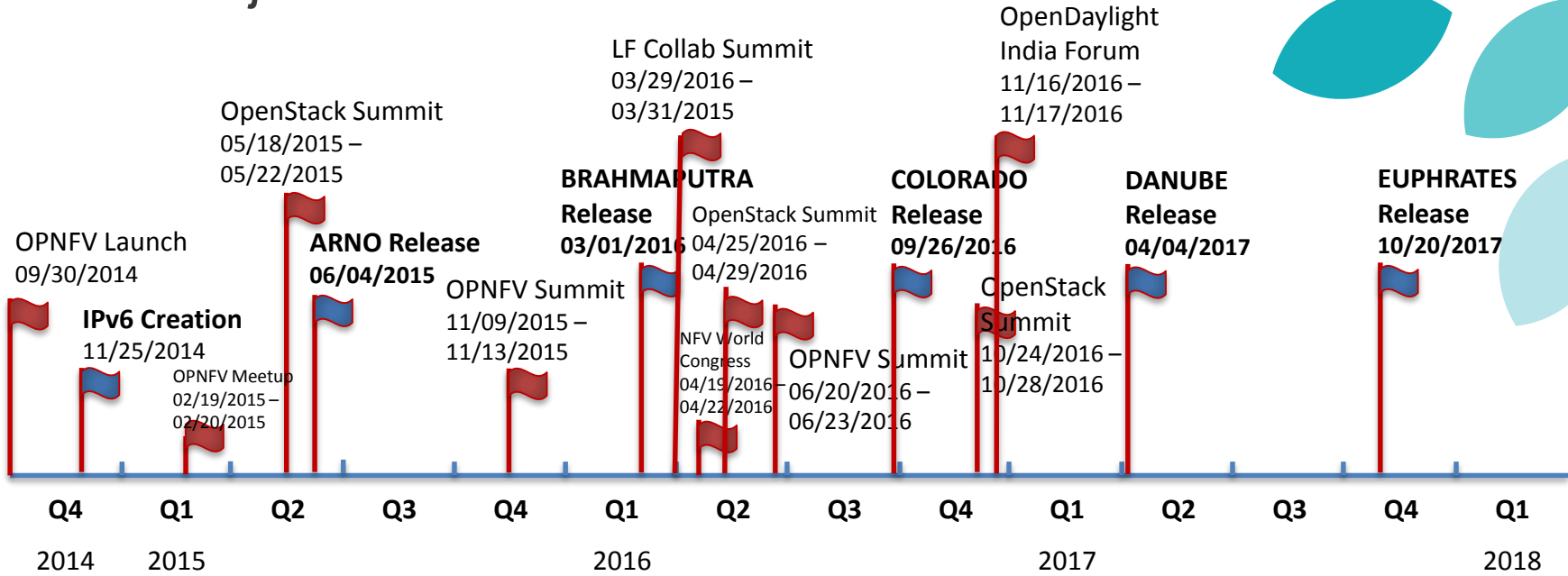
- Project Creation Date: November 25<sup>th</sup>, 2014
- Current Lifecycle State: Incubation
- Gerrit Repo: ipv6
- Project Wiki: <https://wiki.opnfv.org/display/ipv6>
- Project Lead: Bin Hu [bh526r@att.com](mailto:bh526r@att.com)
- Primary Contact: Bin Hu [bh526r@att.com](mailto:bh526r@att.com)
- 4 consecutive OPNFV releases
- Collaboration with upstream and sister projects in OPNFV
- 40+ contributing individuals from 20+ organizations in the past 3 years
  - 197 Commits, 72 upstream patches and 10 other upstream contributions
  - email discussions and meeting discussions



# IPv6 Project Introduction

- Goal
  - A meta distribution of IPv6-enabled OPNFV platform
- Deliverables
  - An integrated package consisting of basic upstream components
  - Auto configuration script to automate the configuration and provisioning of IPv6 features (for those that can be automated)
  - An Installation Guide and/or User Guide with step-by-step instructions of manual configuration of IPv6 features (for those that cannot be automated)
  - Test cases adapted to IPv6 specific use cases
  - Gap analysis and Recommendation for next steps

# IPv6 Project Achievements



## ARNO

- Requirements
- Gap Analysis (Kilo)
- Design of Service VM as IPv6 Router
- Upstream patches

## BRAHMAPUTRA

- Configuration Guide of Service VM as IPv6 Router
- Test Suite for Yardstick
- Gap Analysis (Liberty and Beryllium)
- Upstream patches

## COLORADO

- Installation Guide for IPv6-only Infrastructure
- Configuration Guide of Service VM as IPv6 Router
- Test Case to Dovetail
- Gap Analysis (Mitaka and Boron)
- Upstream patches

## DANUBE

- IPv6-only Infrastructure – IPv6 endpoints in VXLAN tunnel of OS
- Gap Analysis (Newton and Boron)
- Testing methodology
- Upstream patches

## EUPHRATES

- IPv6-only Infrastructure – IPv6 endpoints in VXLAN tunnel of ODL
- Gap Analysis (Ocata and Carbon)
- Upstream patches



# IPv6 Project Upstream Achievements

- Improving IPv6 Support in OpenStack
  - <https://wiki.opnfv.org/display/ipv6/IPv6+Upstream+OpenStack>
  - 33 patches: 20 Neutron, 6 Tempest, 4 DevStack, 1 Nova and 2 others
- Improving IPv6 Support in OpenDaylight
  - <https://wiki.opnfv.org/display/ipv6/IPv6+Upstream+ODL>
  - 38 patches: 34 NetVirt, and 4 Genius
- Actively participated in reviews and discussions in OpenStack and OpenDaylight upstream communities
  - <https://wiki.opnfv.org/display/ipv6/IPv6+Upstream+Others>
  - OpenStack: IPv6 IPAM, provider network support, L3 HA router, prefix delegation, security group, testing
  - OpenDaylight: IPv6 IPAM, east-west routing, security group, ND for Neutron router interface, testing



# IPv6 Project Industry Outreach

- Summarized at <https://wiki.opnfv.org/display/ipv6#IPv6Home-OtherResources>, including:
  - 2016 OpenDaylight India Forum: [IPv6 Support in OpenDaylight](#)
  - 2016 OPNFV Summit: [Road to Multisite IPv6 – Scenarios, Challenges and Perspectives](#)
  - 2016 OpenStack Summit: [Using an Service VM as an IPv6 vRouter](#)
  - 2016 NFV World Congress: [IPv6 in OPNFV](#)
  - 2016 Linux Foundation Collaboration Summit: [IPv6 – Service VM as a vRouter](#)
  - 2015 OPNFV Summit:
    - [IPv6 - Setup of a Service VM as an IPv6 vRouter](#) @ Design Summit on November 10, 2015
    - [OPNFV PoC Overview](#) @ OPNFV Summit on November 11, 2015
    - [IPv6 - Service VM as a vRouter](#) @ OPNFV Summit on November 12, 2015
  - 2015 Open Networking Summit: [A Multivendor, Interoperable NFV Solution](#)
  - 2015 OpenStack Summit:
    - [IPv6 Breakout Session](#) (Bin Hu, AT&T)
    - [IPv6 Fundamentals](#) (Jonne Soininen, Nokia)
    - [IPv6 VM for OPNFV vRouter](#) (Prakash Ramchandran, Huawei)
    - [IPv6 Infrastructure Support in OpenStack](#) (Sridhar Gaddam, RedHat)
  - [IPv6-enabled OPNFV](#) presentation at OPNFV Meetup on February 19-20, 2015 in Santa Rosa, CA

# IPv6 Project Metrics

- 197 commits to ipv6 repo, 6 authors, and 7,454 LOC
  - AT&T, Ericsson, NEC, and independent
- 33 patches and 5 other contributions in OpenStack
  - Primarily Red Hat and others
- 39 patches and 5 other contributions in OpenDaylight
  - Primarily Red Hat and others
- Collaborated with other projects such as Apex, Fuel, Compass, Joid
  - They provided installer support and infrastructure support
- Collaborated with Yardstick and Dovetail etc.
  - Contributed IPv6 test cases
- 40+ contributing individuals from 20+ companies
  - commits, email discussion and meeting discussions





# IPv6 Project Future Plan

- More installer support of IPv6-only infrastructure
- IPv6 in container networking
- Upstream maintenance, e.g.
  - External routing (north-south) in ODL
  - Spawning a VM on IPv6 provider network, either flat or VLAN, in ODL
  - IPv6-only infrastructure in ODL
  - IPv6 in BGPVPN in ODL
  - IPv6 Cluster Support in ODL
  - Etc.





## Questions?

Please direct any questions or comments to [info@opnfv.org](mailto:info@opnfv.org)