OPEN SOURCE ONOS PROJECT

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Why Open Source?

Not many people are asking this question anymore..
Open Source is the new way to develop

Greater choice for end users  Richer feature set  Agile  Lower cost

High quality because of stringent development and test processes  No vendor lock-in  But also a great opportunity for vendors to build and/or support OS-based commercial solutions
Networking industry agrees

Networking industry is relatively new to open source but is fast agreeing that:

• Open source is a great way to develop platforms that are strategic but difficult to build and monetize.

• Open source is an asset not a threat - enables value creation by providing a core platform to build differentiated, complete solutions on.
Why ONOS?
ONOS is for Service Providers

Enabling SDN adoption for carrier-grade service and network innovation

FROM

Limited Service Flexibility
Lack of Agility

Vendor specific control plane
Proprietary hardware

Today’s Closed Networks

TO

Services Innovation

Network Function as a Service

Open SDN Control Plane

White box Network (switches and servers)

Network Innovation
ONOS helps realize benefits of SDN

- Agility in new service creation
- Carrier grade architecture and mission critical functionality
- Easy legacy migration
- Capitalize on white boxes and reduce CapEx

ONOS
Scale, HA, Performance, Security, Northbound and Southbound Abstractions to Support Diversity

- OpenFlow
- South-Bound Interface A
- South-Bound Interface B

APP
APP
APP
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ONOS is ready to be open sourced

ON.Lab and partners have been developing ONOS and are now getting ready to open source it on Dec 5th, 2014
OPEN SOURCE ONOS PROJECT

Mission

To produce the Open Source Network Operating System that will enable network operators to build real Software Defined Networks.
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Values

Serve Network Operators as end Customers

Practice true Meritocracy

Value and enable Innovation

Strive for Quality, consistently

Respect for others in all interactions

Complete Transparency
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Ecosystem

ON.LAB

SERVICE PROVIDERS

VENDORS

COMMUNITY
OPEN SOURCE ONOS PROJECT

Roles

ON.LAB

- Carrier and vendor neutral
- Build core platform
- Provide technical shepherding
- Build community

Service Providers

- Provide funding
- Provide requirements
- Develop use cases
- Drive POCs, deployments
- Bring vendors along

Vendors

- Provide funding
- Provide engineering resources
- Build products and solutions
- Provide integration, test and support services

Community

- Drive ONOS and help it thrive and evolve
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**Governance**

- **Board of Directors:**
  - Provide strategic and financial oversight.
  - Recruit members

- **Architecture Steering Group:**
  - Define and steward technical direction
  - Elected by Active Technical Contributors

- **Use Cases and Solutions Group:**
  - Drive requirements, POC, deployments

- **Roadmap and Releases Group:**
  - Plan roadmap
  - Drive Releases

- **Community Group:**
  - Build, support, represent community
Membership Goals

**Membership funding allocation**

- **Core ONOS team**
  
  Budget: $5 million for 20 architects, developers and test

- **Community building, processes, infrastructure and outreach**
  
  Budget: $1 million

- **Use Cases, POCs & Trials**

**Partnership expansion:**

- Add 2-4 Service Providers in 2015

- Add 2-4 Vendors in 2015

Enable everyone to get involved

**Empower contributors. Encourage diversity.**
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Membership Structure (In progress)

**PARTNER**
- $500K, 2 developers, 1 test deployment
- 1 Board Seat
- 1 Use case vote

**SUPPORTER**
- $200K, 1 developer, 1 test deployment
- 1 Board Seat per 3
- 1 Use case vote per 3

**COLLABORATOR**
- $10K-$150K*, 1 developer
- No board seats or vote
- *Depending on member revenues

**AFFILIATE**
- By Invitation: Research, non-profits
- No board seats or vote

**INDIVIDUAL**
- Open to everyone
- No board seats or vote

(Note- Architectural Steering Group is elected by Active Technical Contributors)
ONOS will be open sourced under Apache 2.0 license.

ONOS Contributor License Agreement (CLA) is based on the Apache Software Foundation form and you can view this at:

What about OpenDaylight (ODL)?
ODL and ONOS are two very different software systems and projects with different aspirations so it is best not to compare them.

**BUT**

Many see ODL and ONOS as having the same goals and want to understand similarities and differences.
### Challenges with ODL & ONOS Comparison

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<tr>
<th><strong>OPENDAYLIGHT</strong></th>
<th><strong>ONOS</strong></th>
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<tbody>
<tr>
<td><strong>• A Framework</strong> with many projects and software modules</td>
<td><strong>• A System/Platform</strong> with clearly defined architecture, northbound and southbound abstractions/APIs, performance attributes</td>
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| **• Trying to address all domains: Data Center, Service Provider, Enterprise** | **• Designed for Service Provider networks**  
  **• Build this right, then expand focus** |
| **Service Provider ODL emphasis is on:**  
  **• Configuration and provisioning on legacy devices** | **ONOS emphasis is on:**  
  **• separation of control and data plane**  
  **• enabling control, config & mgmt apps** |
| **• ODL Service provider use cases do not require scale, HA, performance** | **• ONOS views scale, HA, performance, NB/SB abstractions/APIs as pre-requisites for carrier-grade platform and services** |
| **• ODL has focused on SB plug-ins for legacy devices** | **• ONOS also offers SB abstractions and APIs to support OpenFlow and legacy** |

Both ODL and ONOS are moving targets!!
ONOS Goal: Unlocking SDN value for Service Providers

2013

ODL

Open SDN Control Plane

Whitebox Network
(swiches and servers)

Service Provider SDN Networks

2014

ONOS

2019: Our goal is to transform networks with partners and community in 5 years

• Network OS with HA, Performance, Scale-out, Abstractions
• Diverse Community: Carriers, Vendors, Research, Academia, Individuals
• Service Provider Use Cases
• Migration path to all SDN

• Automation of CLI/Provisioning
• Network Configuration and management of legacy devices
Unlocking real SDN value for Service Providers will require all of us to **think beyond “NaaS on legacy”**.

**Unlock SDN value with:**

- Clean Separation of control and data planes
- Vendor agnostic protocol between control/data
- Well defined northbound abstraction for services
ONOS
SDN with migration path for legacy

ONOS: Open Network OS
Scale, HA, Performance, Security, NB and SB Abstractions to support diversity

OpenFlow
South-Bound Interface A
South-Bound Interface B

Legacy Network ➔ A network with white boxes
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Timelines and Roadmap
ONOS Rollout Timeline

Q4 2014 Milestones

- Announce OS ONOS date
- ONOS Webinar 1 Vision & Value
- ONOS Open Sourced SW Available
- ONOS Webinar 2 Technical Deep Dive
- ONOS Summit
Open Source ONOS Release (Dec 5th)

Solid ONOS platform

- Scale, HA, Performance
- NB abstraction/APIs for diverse services
- SB abstraction/APIs for Openflow and legacy devices

Use Cases

- Demonstrate ONOS potential with SP/WAN use cases
- Multi-layer packet optical SDN control, SDN-IP, segment routing, NFaaS in Central Office

Strong team to sustain ONOS

- Architects, developers, QA, app developers
- Expertise includes networking, distributed systems
- Has been working closely with partner and community developers to build ONOS

Community

- Sponsors/Partners: AT&T, NTT Comm, Ciena, Ericsson, Fujitsu, Huawei, Intel, NEC
- Collaborators: I2, CREATE-Net, CNIT, SRI, Infoblox...
- Governance, on-boarding, developer resources, support
ONOS in 2015

**VALUE**
- Robust Core
- HA/Performance Leadership
- Modularity
- New WAN/Service Provider use cases
- Security
- Richer, flexible NB/SB Abstractions and APIs
- Hierarchical + peer-to-peer ONOS
- OSS/BSS Integration
- IPv6

**COMMUNITY**
- Best OS Practices
- Strong Architecture Shepherding
- Build Community of Developers + Contributors
- More carriers + Diverse Vendors
- Community Test Lab
- Education/Outreach
- True Meritocracy

**DEPLOYMENT**
- POCs/Deployments
- Deployments with Solution Providers
- Research Networks (Internet2..)
- Europe/Asia (DREAMER..)
- Target different networks Including WAN, NFV, Cellular..

**REAL PROOF POINTS**
Realistic trials and deployments with service providers and partners
Open Source ONOS
Available on December 5th!