OpenDaylight
Introduction and Overview

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Agenda

Introduction

Architecture Overview

Project Life Cycle, Simultaneous Release Plan and Projects

How to Get Involved and A Bit on Governance

Q&A
What is the OpenDaylight Project?

The OpenDaylight Project is a collaborative open source project that aims to accelerate adoption of Software-Defined Networking (SDN) and create a solid foundation for Network Functions Virtualization (NFV) for a more transparent approach that fosters new innovation and reduces risk. Founded by industry leaders and open to all, the OpenDaylight community is developing a common, open SDN framework consisting of code and blueprints.
Broad Industry Support
Goals

- **Code:** To create a robust, extensible, open source code base that covers the major common components required to build an SDN solution

- **Acceptance:** To get broad industry acceptance amongst vendors and users

- **Community:** To have a thriving and growing technical community contributing to the code base, using the code in commercial products, and adding value above, below and around

- **Key Principles:** Open, transparent, fair
Code

- “Coin of the Realm”

- A wide array of technologies contributed by leading companies and developers
  - See “Hydrogen Projects” in a few slides

- Open Source: Any developer can contribute code as an individual

- Robust framework/platform for new apps and tools
  - Eclipse Public License (EPL)

- So what is the ODP Project Framework and Architecture?
General Project Framework

- Network applications, orchestration, and services
  - User interfaces
  - OpenDaylight APIs (REST)
- Controller platform
  - Network service functions
  - Platform services
  - Extensions
- Southbound interfaces & protocols
  - Service Abstraction Layer (SAL)
    - OpenFlow
    - Other standard protocols (ONF, IETF, ...)
    - Vendor-specific interfaces
- Data plane elements (virtual switches, physical device interfaces)
Drilling Down a Bit…

Base network service functions:
- topology mgr
- stats mgr
- switch / device mgr
- fwding

Virtual network manager:
- L4-L7 service manager

Service abstraction layer:
- plug-in mgr., capability abstractions

Vendor-specific interfaces:
- other std. protocols (ONF, IETF, …)

Southbound interfaces & protocol plugins:
- OpenFlow 1.0, 1.3
- Open switch API
- SAN (SMI-S)
- other std. protocols (ONF, IETF, …)

Controller platform:
- OpenStack Quantum
- CloudStack
- oVirt

Data plane interfaces and enhancements:
- virtual forwarding enhancements
- hw-independent interfaces and data models
Major Architectural Feature:
Service Abstraction Layer (SAL)

Project Life Cycle Schematic

**proposed**
- new projects (not yet part of OpenDaylight)

**bootstrap**
- temporary entry point for projects during startup phase

**incubation**
- nascent projects

**mature**
- successful, active projects, perhaps with limited community

**core**
- projects core to OpenDaylight platform

*All project graduation reviews managed by TSC*
Project Life Cycle Detail

- **Creation Review**
  - Proposal Posted for 2 weeks:
    - Name (trademark) OK
    - Repo Name Specified
    - Description Complete
    - Scope well defined
    - Resources Commmitted (developers committed to work)
    - Committers identified
    - Vendor Neutral
    - Meets Board Policy (including IPR)
    - Review by TSC and Approval

- **Graduation Review**
  - Graduation Proposal Posted for 2 weeks:
    - Working code base
    - Active Community
    - History of Releases (using Mature Release Process)
    - Destination Top Level Project Specified
    - Acceptance of conditions of proposed TLP
    - Committers vote on seeking graduation
    - Accepted by vote of destination
    - Review by TSC and Approval

- **Promotion Review**
  - Promotion Proposal Posted for 2 weeks:
    - Statement of centrality of role
    - Committers vote on seeking promotion
    - Review by TSC and Approval

- **Elevation Review**
  - Elevation Proposal Posted for 2 weeks:
    - Scope of acceptable subprojects
    - Statement of requirements placed on subprojects, both mature and incubator
    - Identified at least two proposed subproject Committers vote on seeking elevation
    - Review by TSC and Approval

- **Termination Review**
  - Elevation Proposal Posted for 2 weeks:
    - States reason termination is sought
    - Calls out impact on other projects, users, communities and how they will be mitigated
    - Indicates where the project will be archived
    - Can be initiated by vote of the committers
    - Can be initiated by TSC or PMC if containing project
    - Project has no remaining committers
    - Project has had no commits in SCM in 18 months
    - Review by TSC and Approval

- **Top Level Projects have a Project Management Committee (PMC) that votes on its decisions including accepting new PMC members and new subprojects**

- **Mature Projects need not progress to Core**

- **Anyone can propose a project**
Hydrogen Projects

Projects in Bootstrap State

- Controller (Cisco)
- Network Virtualization Platform (BSN)
- Virtual Tenant Network (NEC)
- Open DOVE (IBM)
- OpenFlow Plugin (Ericsson/Cisco/Pantheon)
- Affinity Metadata Service (Plexxi)

Projects in Incubation State

- YANG Tools (Cisco)
- LISP Flow Mapping (ConteXtream)
- OVSDB Integration (UK/Cisco)
- Openflow Protocol Library (Pantheon/Cisco)
- BGP-LS/PCEP (Cisco)
- Defense4All (Radware)
- SNMP4SDN (ITRI)

New Projects

- Integration
- DilUX
# Hydrogen Simultaneous Release Plan 2013

## Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Offset 0 Date</th>
<th>Offset 1 Date</th>
<th>Offset 2 Date</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0</td>
<td>6/24/2013</td>
<td>6/26/2013</td>
<td>6/28/2013</td>
<td>Simultaneous Release Open</td>
</tr>
</tbody>
</table>
| M1        | 7/22/2013     | 7/24/2013     | 7/26/2013     | 1. Projects must have declared intent to participate in Simultaneous Release  
2. Participating Projects must have published a candidate Release Plan for public comment (Release Plan Template) |
| M2        | 8/19/2013     | 8/21/2013     | 8/23/2013     | Participating Projects must have declared their final Release Plan |
| M3        | 9/16/2013     | 9/18/2013     | 9/20/2013     | Latest possible Continuous Integration Test Start |
| M4        | 10/14/2013    | 10/16/2013    | 10/18/2013    | 1. API Freeze  
2. Latest possible Continuous System Test Start |
2. String Freeze (all internationalizable strings frozen to allow for translation)  
3. Latest possible date for commencing User Facing Documentation |
| RC0       | 11/18/2013    | 11/20/2013    | 11/22/2013    |  |
| Formal Release | 12/9/2013 | |  |  |
## Projects in the “Hydrogen” Release - Coming 12/9/13

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Originator (others)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>Modular, extensible, scalable, and multi-protocol SDN controller based on OSGi</td>
<td>Cisco (IBM, RedHat, NEC, etc.)</td>
</tr>
<tr>
<td>Virtual Tenant Network</td>
<td>Multi-tenant network virtualization application using OpenFlow</td>
<td>NEC</td>
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<tr>
<td>YANG Tools</td>
<td>Java-based NETCONF and YANG tooling for OpenDaylight projects</td>
<td>Cisco</td>
</tr>
<tr>
<td>OpenFlow Protocol Library</td>
<td>OF 1.3 protocol library implementation</td>
<td>Pantheon (IBM, Cisco, Ericsson)</td>
</tr>
<tr>
<td>OpenFlow Plugin</td>
<td>Integration of OpenFlow protocol library in controller SAL</td>
<td>Ericsson, IBM, Cisco</td>
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<tr>
<td>Affinity Metadata Service</td>
<td>APIs to express workload relationships and service levels</td>
<td>Plexxsi</td>
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<tr>
<td>Defense4All</td>
<td>DDoS detection and mitigation framework</td>
<td>Radware</td>
</tr>
<tr>
<td>BGP-LS/PCEP</td>
<td>Support for traffic eng with BGP-LS (BGP protocol library and topology model) and PCEP (path programming model)</td>
<td>Cisco</td>
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<tr>
<td>OVSDB</td>
<td>OVSDB configuration and management protocol support (e.g., for Open vSwitch and other OVSDB servers)</td>
<td>Univ. of Kentucky</td>
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<tr>
<td>LISP Flow Mapping</td>
<td>LISP (locator/identifier separation protocol) plugin, LISP mapping service (can be used to implement virtual networks)</td>
<td>ConteXtream</td>
</tr>
<tr>
<td>SNMP4SDN</td>
<td>SNMP protocol support; APIs to manage commodity Ethernet switches</td>
<td>Industrial Technology Research Inst.</td>
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<tr>
<td>Open DOVE</td>
<td>Multi-tenant network virtualization based on overlays, including ctrl plane and OVS-based data plane</td>
<td>IBM</td>
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Proposed Hydrogen Release Vehicles

- Release Vehicles and their contents are still being finalized

- Current proposal:
  - Base Edition
  - Virtualization Edition
  - Service Provider Edition

- Note: REL (yum) packages in process
Base Edition

Management
GUI/CLI

OpenDaylight APIs (REST)

Base Network Service Functions

- Topology Mgr
- Stats Mgr
- Switch Mgr
- Host Tracker
- Shortest Path Forwarding
- Network Config

Service Abstraction Layer (SAL)
(plug-in mgr., capability abstractions, flow programming, inventory, ...)

OpenFlow
1.0 1.3

NETCONF

OpenFlow Enabled Devices

Open vSwitches

Additional Virtual & Physical Devices

Controller Platform

Network Applications Orchestration & Services

Southbound Interfaces & Protocol Plugins

Data Plane Elements (Virtual Switches, Physical Device Interfaces)

Open vSwitches

www.opendaylight.org
Virtualization Edition

Management GUI/CLI

VTN Coordinator

DDoS Protection

OpenStack Neutron

OpenDaylight APIs (REST)

Base Network Service Functions

Topology Mgr
Stats Mgr
Switch Mgr
Host Tracker
Shortest Path Forwarding
Network Config

Service Abstraction Layer (SAL)
(plug-in mgr., capability abstractions, flow programming, inventory, …)

Affinity Service
OpenStack Service
VTN Manager
DOVE Mgr

Controller Platform

Southbound Interfaces & Protocol Plugins

OpenFlow 1.0 1.3
NETCONF
OVSD

OpenFlow Enabled Devices

Open vSwitches

Additional Virtual & Physical Devices

Network Applications Orchestration & Services

Controller Platform

Southbound Interfaces & Protocol Plugins

Data Plane Elements (Virtual Switches, Physical Device Interfaces)
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<td>Affinity Service</td>
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<tr>
<td>LISP Service</td>
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<td>OpenFlow 1.0</td>
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Getting Involved

Developer documentation: wiki.opendaylight.org

list of current projects in various states
links to documentation on current projects, e.g., how to get/build code, architecture, ...
information on proposing new projects for OpenDaylight

Main Page

Welcome to the OpenDaylight Developer Documentation Wiki

This wiki contains all of the developer level documentation for the OpenDaylight Project. As components are being proposed for inclusion in the project and added to the software repository, we are adding the documentation for each component as it has been provided by the contributor. These contributions and their documentation are either in the project lifecycle state of "Bootstrap" or "Incubation" (as identified below). As the projects graduate from these early lifecycle states to more mature states, their associated wiki documentation will also become more mature and integrated.

Contents
1 Mature/Core/Top Level Projects
2 Bootstrap Projects
3 Incubation Projects
4 Proposed Contributions
5 To Propose a New Contribution to OpenDaylight
6 Hackfests

Mature/Core/Top Level Projects


Getting Involved, Cont

Open mailing lists:  lists.opendaylight.org

discussion groups on specific projects

cross-project discussions

announcements

<table>
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<th>List</th>
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<tr>
<td>controller-announce</td>
<td>OpenDaylight Controller Announcements (low volume)</td>
</tr>
<tr>
<td>controller-bugs</td>
<td>Notifications from Bugzilla for the OpenDaylight Controller.</td>
</tr>
<tr>
<td>controller-dev</td>
<td>Developer discussions for the Open Daylight Controller.</td>
</tr>
<tr>
<td>controller-gerrit</td>
<td>Gerrit automated notices about the OpenDaylight Controller.</td>
</tr>
<tr>
<td>controller-jenkins</td>
<td>Jenkins CI notifications for the OpenDaylight Controller</td>
</tr>
<tr>
<td>controller-users</td>
<td>Community driven support alias for the OpenDaylight Controller.</td>
</tr>
<tr>
<td>Discuss</td>
<td>OpenDaylight cross project discussion</td>
</tr>
<tr>
<td>.opendaylight-announce</td>
<td>OpenDaylight Announcements (low volume)</td>
</tr>
<tr>
<td>.opendaylight-users</td>
<td>OpenDaylight community support</td>
</tr>
<tr>
<td>project-proposals</td>
<td>OpenDaylight project proposals to the TSC</td>
</tr>
<tr>
<td>TSC</td>
<td>OpenDaylight Technical Steering Committee</td>
</tr>
</tbody>
</table>

Welcome!

Below is a listing of all the public mailing lists on lists.opendaylight.org. Click on a list name to get more information about the list, or to subscribe, unsubscribe, and change the preferences on your subscription. To visit the general information page for an unadvertised list, open a URL similar to this one, but with a '/' and the list name appended.

List administrators, you can visit the list admin overview page to find the management interface for your list.

If you are having trouble using the lists, please contact mailman@lists.opendaylight.org.
OpenDaylight governance – 10K view

Bylaws: http://www.opendaylight.org/project/bylaws

ODP *Board of Directors* will manage business leadership for OpenDaylight including governance, marketing and operational decisions

- Initial BOD populated by Platinum members + 1 gold + 1 silver

ODP *Technical Steering Committee* sets technical direction

- TSC provides technical leadership for OpenDaylight
- TSC members are elected and is comprised of developers and project leaders
  - Initially seeded with Platinum member representatives
- TSC chair ex-officio member of the Board
- TSC chair elected annually with no term limits

Importantly: *OpenDaylight is open to anyone*. In particular

- Anyone can develop and contribute code
- Anyone get elected to the Technical Steering Committee
- Anyone can get elected to the Board
- Anyone can help steer a project forward in any number of ways
A Little More on the TSC

Technical direction set by the Technical Steering Committee
- Responsible for maintaining platform codebase
- Sets release train scope and schedule

TSC membership
- Initialized with representatives from platinum member companies
- Will evolve to be comprised of core project leads and community representatives

TSC meetings and mailing list are open to the community
- See lists.opendaylight.org to subscribe to the TSC mailing list
- TSC calls are Thursday at 1000 PDT (open to all)
  - See https://wiki.opendaylight.org/view/TSC:Main
- TSC Meeting Minutes and Call recordings
  - See https://wiki.opendaylight.org/view/TSC:Main
- Technical Work Stream calls are Monday at 1300 PDT (open to all)
  - See https://wiki.opendaylight.org/view/Tech_Work_Stream:Main
Resources

- More information and to join:
  - wiki.opendaylight.org
- Keep informed and join the conversation
  - IRC: #opendaylight on Freenode
  - Open mailing lists: lists.opendaylight.org
  - @openDaylightSDN
  - #OpenDaylight
Thanks!