OpenDaylight: An Open Source SDN for Your OpenStack Cloud

Stephan Baucke, Ericsson
Kyle Mestery, Cisco
Anees Shaikh, IBM
Chris Wright, Red Hat

Nov 6, 2013
Where is this talk going?

- OpenDaylight overview
  - What is OpenDaylight?
  - Who is OpenDaylight?
  - Projects in Hydrogen
  - Hydrogen Virtualization Edition
- OpenDaylight with OpenStack
- Plenty of time for open Q/A
What is OpenDaylight

OpenDaylight is an **Open Source Software** project under the **Linux Foundation** with the goal of furthering the adoption and innovation of **Software Defined Networking (SDN)** through the creation of a common industry supported platform

<table>
<thead>
<tr>
<th>Code</th>
<th>Acceptance</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create a robust, extensible, open source code base that covers the major common components required to build an SDN solution</td>
<td>To get broad industry acceptance amongst vendors and users</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• using OpenDaylight code directly or through vendor products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Vendors using OpenDaylight code as part of commercial products</td>
<td></td>
</tr>
</tbody>
</table>
What is OpenDaylight building?

OpenDaylight is an open community that is building:

- An evolvable SDN platform capable of handling diverse use cases and implementation approaches
- Common abstractions of capabilities NorthBound for people to program
- Intermediation of those capabilities to multiple Southbound implementations
- Programmable network services
- Network applications
- Whatever else we need to make it work
Project Framework

Network applications, orchestration, and services
- user interfaces
- network applications, orchestration, and services

OpenDaylight APIs (REST)

Controller platform
- network service functions
- platform services
- extensions

Service Abstraction Layer (SAL)
- OpenFlow
- other standard protocols (ONF, IETF, ...)
- vendor-specific interfaces

Southbound interfaces & protocols

Data plane elements (virtual switches, physical device interfaces)
Who is OpenDaylight? (the corporate sponsors)
Who is OpenDaylight? (community)

• Like any Open Source Project, OpenDaylight primarily consists of those who show up to do the work
  • Currently commits from over 90 contributors from many different organizations (and unaffiliated individuals) and growing
    • Running around 100 commits per week and accelerating
  • Strong integration and testing community
OpenDaylight Simultaneous Release

- OpenDaylight is multi-project
  - 15 projects currently in “bootstrap” or “incubation”

- Bringing components together in a simultaneous release
  - Code name: Hydrogen
  - Planned due date: Dec 9, 2013

- Several “editions” to group related functionality together
  - base, virtualization, service provider
  - virtualization edition will provide OpenStack integration
Projects in the Simultaneous Release

- Controller
- VTN
- OpenDove
- Affinity Management Service
- LISP Mapping Service
- Yang Tools
- Defense4All
- BGP-LS/PCEP

- OpenFlow Protocol
- OpenFlow SB Plugin
- OVSDB
- SNMP4SDN
OpenStack Integration

- OpenDaylight exposes a single common OpenStack Service Northbound
  - API exposed matches Neutron API precisely
  - multiple implementations of Neutron networks in OpenDaylight
- OpenDaylight OpenStack Neutron Plugin simply passes through
  - simplifies OpenStack plugin
  - pushes complexity to OpenDaylight
OpenStack Integration: Status and Next Steps

• *OpenStack Neutron API Service* available now in OpenDaylight
  - provides Neutron API handling for multiple implementations
• Initial ML2 plugin focused on core Neutron functionality
  - L4-L7 service support as a next step
• Plugin planned to be upstreamed into OpenStack Neutron during the Icehouse release

Try OpenDaylight now with Devstack
Call to Action

- OpenDaylight is open to everyone
- Join the mailing lists
- Join the IRC channel
- Bring patches
- Bring project proposals
- Kick the tires
Resources

- More information and to get involved:
  - wiki.opendaylight.org
  - weekly open conference calls
- Keep informed and join the conversation
  - IRC: #opendaylight on Freenode
  - Open mailing lists: lists.opendaylight.org
  - @openDaylightSDN
  - #OpenDaylight
backup
# Simultaneous Release Plan

<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 |
| 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 | | | |
Proposed Hydrogen Release Vehicles

- Release Vehicles and their contents are still being finalized
- Current proposal:
  - Base Edition
  - Virtualization Edition
  - Service Provider Edition
OpenDaylight APIs (REST)

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

Controller Platform

Network Applications Orchestration & Services

Southbound Interfaces & Protocol Plugins

Data Plane Elements (Virtual Switches, Physical Device Interfaces)

OpenFlow 1.0 1.3

NETCONF

OpenFlow Enabled Devices

Open vSwitches

Additional Virtual & Physical Devices

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

Management GUI/CLI

OpenDaylight APIs (REST)

OpenFlow

NETCONF

Open vSwitches

Additional Virtual & Physical Devices

Base Edition

VTN: Virtual Tenant Network
DOVE: Distributed Overlay Virtual Ethernet
DDoS: Distributed Denial Of Service
LISP: Locator-Identifier Separation Protocol
OVSDB: Open vSwitch DataBase Protocol
BGP: Border Gateway Protocol
PCEP: Path Computation Element Communication Protocol
SNMP: Simple Network Management Protocol