

### Introduction to OpenDaylight: An Open Source Community around Software-Defined Networking



Terry Nakajima NEC Corporation OpenDaylight Board Member May 29, 2013



### What is OpenDaylight?

OpenDaylight is an <u>Open Source Software</u> project under the <u>Linux Foundation</u> with the goal of furthering the adoption and innovation of <u>Software Defined Networking</u> (SDN) through the creation of a common industry supported framework.





www.opendaylight.org 2

#### SDN -- New Open Network Era Network Computer Conventional Current Current Mainframe SDN Industry Computer Network Industry Industry Industry **Applications Applications Applications Applications** Unbundled Unbundled Integrated Integrate OS OS OS OS Unbundle Unbundl Hardware Hardware Hardware Hardware PENDAYLIGHT www.opendaylight.org

3

### What is the scope?

Applications and services that ride on, optimize, exploit, and manage the network Security, load Applications balancing, etc. services Tooling API's Software Defined Networking -- a software layer that makes the Software Defined Network (SDN) platform network more programmable, agile, and efficient Open protocols with enablement for proprietary extensions Physical and virtual data forwarding entities Physical Network Physical Network



### Who are the members?



Members as of May 26, 2013 and growing



www.opendaylight.org

# Project Daylight 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.





### We want to accelerate the adoption of SDN



- Enterprises and Service Providers can deploy and build on Daylight with fewer vendor lock-in concerns
- Vendors can add value above, below , around
  - And vendors can deliver value faster
- The industry adoption rate increases dramatically



7

## Industry Impact

- Develop a common environment for customers
- An open framework, an open standard and an industry wide supported open controller codebase that anyone can use, plug into or contribute new enhancements
- Customers can participate and gain access to new technologies more quickly
- Real interoperability across vendors (App-platform-switch)
- No vendor lock-in for customers
- Speeds up acceptance of API's which can only emerge when there is a broadly accepted software platform
- Enable faster innovation by vendors

### Speeds up adoption of SDN



### **Project Framework (Architecture)**





## **Progress through Innovation**

- Membership open to all
  - No charge for individual developers
  - Fee-based vendor membership to provide common resources
- Business leadership: Board of Directors
  - Governance, marketing, operations
- Technical leadership: Technical Steering Committee (TSC)
  - Meritocracy
  - Technical direction, project selection, technical decisions



## The Code

- A wide array of technologies contributed or proposed as contribution by leading companies and developers
  - A veritable treasure trove of riches
  - TSC has to put this together in a coherent fashion
  - 3Q13 is the first OpenDaylight code drop
- Developers can contribute code at the individual level no money necessary
- Robust platform for new apps and tools
- <u>Eclipse Public License</u> (EPL)



### Timeline

Date	Event
08 April 2013	Pubic announcement & first code contributed
15-17 April 2013	Plenary and Technical Sessions at Open Networking Summit <u>Video Archive</u>
6-10 May 2013	Interop Las Vegas
Q2 CY13	Technical architecture released
Q3 CY13	Initial code drop





www.opendaylight.org 12

### **OpenDaylight Structure**

- Organized as a separate project within The Linux Foundation with separate Board and Technical Steering Committee components.
  - Board of Directors. The consortium is a 501(c)(6) non-profit corporation as a project under the Linux Foundation
  - Technical Steering Committee. Formed from the Project Leads from the core projects and one representative designated by each Platinum member
- Goal to ramp to 140 developers and \$2-3M/year within 12 months of launch and eventually 200-300 developers
  - Includes modest number of build, test, and program-management personnel
  - Contributions licensed to the consortium under EPL and licensed out to interested parties under that same license
- Includes tiered membership of Platinum, Gold, Silver, and individual memberships
  - Annual fee and full-time engineers (FTEs) verification of committed number of FTEs on honor system
  - Levels provide member with either a default board position (Platinum) or to have an opportunity to be elected to the Board (Gold and Single members)
  - Contributors, committers and project leads influence TSC

Membership Level	Annual Fee	FTEs	IP contribution	Technical Steering Committee	Board / Voting position
Platinum	\$500K	10	Desired significant, in addition to FTEs	One seat per member not otherwise represented	Includes board position
Gold	\$50K-250K (\$50/employee)	3	Not required	May be on TSC if Project Lead	One Board seat per every three, subject to Board size limit
Silver	\$10K-20K (\$10/employee)	0	Not required	May be on TSC if Project Lead	One Board seat elected by all Silver members
Individual	\$0	0		May be on TSC if Project Lead	May be elected to community board seat



### Resources

- More information and to join:
  - www.opendaylight.org
  - info@opendaylight.org
- Keep informed
  - <u>@openDaylightSDN</u>





### Getting started with OpenDaylight

- Developer documentation: <u>wiki.opendaylight.org</u>
  - List of current projects in various states
  - Links to documentation on current projects, e.g., how to get/build code, architecture, etc.
  - Information on proposing new projects for OpenDaylight
  - TSC and Technical Work Stream meeting information



Read Edit View history

Search

### Main Page

Page Discussion

)PENDAYLI

#### 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 ad software repository, we are adding the documentation for each component as it has been provided by the contributor. These contributions and their documenta the project lifecycle state of "Bootstrap" or "Incubation" (as identified below). As the projects graduate from these early lifecycle states to more mature states, wiki documentation will also become more mature and integrated.

#### Contents [hide]

Mature/Core/Top Level Projects
 Bootstrap Projects
 Incubation Projects
 Proposed Contributions
 To Propose a New Contribution to OpenDaylight
 Hackfests



Navigation

Main page Community portal Current events Recent changes Random page Help

Toolbox

What links here Related changes

## Getting involved in OpenDaylight

Open mailing lists: <u>lists.opendaylight.org</u>

- Discussion groups on specific projects
- Cross-project discussions
- Announcements

#### lists.opendaylight.org Mailing Lists

#### 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.

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



Anyone can propose a project

Proposal Creation Review Incubation Graduation Review Mature Projects need not Mature progress to Core Promotion Review Core Top level projects have a Project Management Committee Elevation Review (PMC) that votes on its decisions including accepting new PMC members and new subprojects Top Level



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 if:

Termination Review

Archived

Project has no remaining committers Project has had no commits in SCM in 18 months Review by TSC and Approval

### OpenDaylight **Project Lifecycle**

PENDAYLIGHT

### **OpenDaylight Project Lifecycle - Bootstrap**



### Project Framework



)

### **Proposal Submitted for Review**

### Virtual Tenant Network (VTN)





### Next HackFest

- □ June 6<sup>th</sup> and 7<sup>th</sup>
- Hotel Valencia Santana Row San Jose, CA
- Watch the "Discuss" list at lists.opendaylight.org for more information.



### **End User Input**

□What are your hopes for SDN? What problems are you hoping SDN will solve?

□What SDN efforts has your organization pursued? What have the results been?



# Thank You



## **OpenDaylight Governance Basics**

- Most large, complex open source communities have both a business and a technical governance model where technical leadership contains both a Technical Steering Committee (TSC) and project leads for major components and the business leadership is instantiated in a Board of Directors of the Consortium (Board). The Board and TSC have the ability to change the way they operate over time, subject to the policy and by-laws of the consortium.
- The consortium will operate transparently, openly, collaboratively, and ethically.
  - Business (Board component): The consortium will be established as a 501(c)(6) non-profit corporation as a project under the Linux Foundation to avoid duplicating the corporate organization framework.
    - Responsible for corporate organization, marketing, press, legal, IP policy (including license choice), recruiting new members, and funding/organizing periodic design summits.
    - Multi-tiered membership fee structure, with different levels of voting rights, TSC membership, board seats, etc.
    - Certain membership levels require the member to provide contributors/committer FTEs to the project.
    - Board will set overall Consortium Policy in consultation with the TSC. This policy will describe consortium scope (the aggregate scope of projects) & consortium technical vision & direction, and consortium release guidance to the TSC (e.g., deliver via regularly-scheduled release trains). Typically the Board has no say on technical issues, individual project scope & direction as long as they remain within the scope & direction of the Consortium Policy.
  - **Technical (Technical Steering Committee (TSC) component):** Formed from the Project Leads from the core projects and one representative designated by each Platinum member (see later slides). Spans entire project.
    - Subject to consortium policy set by board, is responsible for simultaneous release dates, release quality standards, technical best practices, monitoring technical progress, mediating technical conflicts between committers and project leads, and organizing inter-project collaboration.
    - Decision via voting as described on slide #8.
    - Daylight will seek to avoid duplicating technology and will use existing technology (e.g. open source libraries) from trusted sources (e.g. Eclipse Foundation and others) as appropriate.



### **OpenDaylight Governance Basics 2**

- Projects: There will be multiple projects under the consortium. Each project, from the start, must be within Consortium policy and have a well defined scope and must work within that scope. Project will follow the Daylight Development Process as described in the Project Life Cycle doc.
- Committers: For each project there is a set of people with rights to commit code to the source code management system: the committers. They are the decision makers on design, code, and patches for their project. They must responsibly participate in the consensus decisions of the TSC
  - Committer rights are earned via code contribution, community trust, etc. standard meritocracy model with new committers to be approved by the TSC
  - Fully open code submission, review, acceptance, build, test, delivery, and support model
  - Committer rights are per project, being a committer on one project does not necessarily give an individual committers
    rights on any other project.
  - Initial committers are specified at project creation. Additional committers are admitted by a vote of existing committers with appropriate process to handle dissent.
  - Committers are not necessarily from member/funding companies they are the best available, but usually full-time for any components in active development
  - Initial projects that form the consortium base will need to have the first set of committers "boot-strapped". In order to
    preserve meritocracy in selection of committers while insuring diversity of committers, each initial project will commit to
    taking on at least 3 committers not from the company of origin within the first 3 months after consortium launch based
    upon evaluation of participation of contributors during that time.
  - The process the committers will use to accept/force modifications/reject code submissions and to add/delete committers (and other development details) will be defined by the Daylight Project Lifecycle document.
- **Contributors:** Most contributors work with their committer and their component's sub-community. They contribute code or other artifacts, but do not have the right to commit to the code base. A contributor may be promoted to a committer by the projects' committers. Done right, most contributors are rarely encumbered by the TSC and never by the Board.

