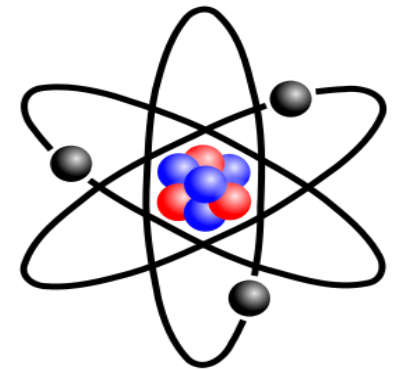
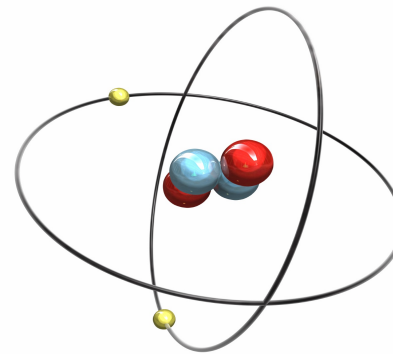
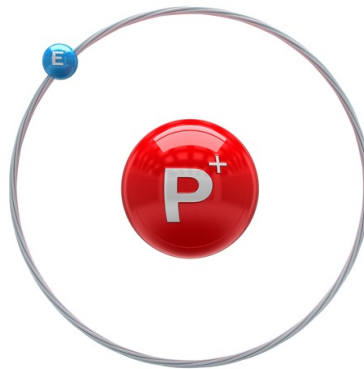




# Current Events in OpenDaylight (and how you can get involved)



David Meyer and Matt Oswalt

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[matt@keepingitclassless.net](mailto:matt@keepingitclassless.net)

@dmm613 @Mierdin

 **LINUX FOUNDATION**  
COLLABORATIVE PROJECTS

# Agenda

- What is Hydrogen
  - Hint: First release of OpenDaylight
- Introduction to Helium
- Next Steps – Beyond Helium
- Get Involved!

# 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

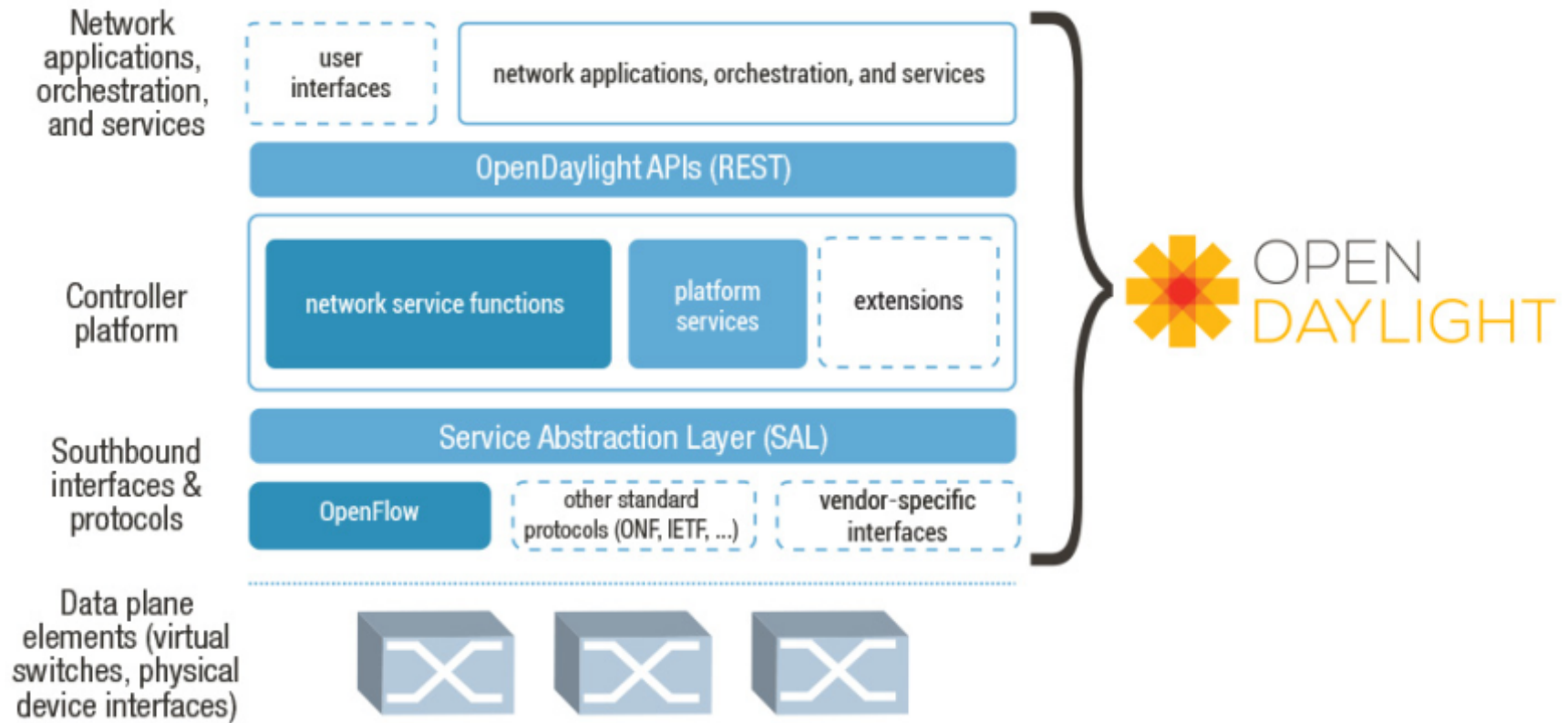
Code	Acceptance	Community
To create a robust, extensible, open source code base that covers the major common components required to build an SDN solution	To get broad industry acceptance amongst vendors and users <ul style="list-style-type: none"><li>• Using OpenDaylight code directly or through vendor products</li><li>• Vendors using OpenDaylight code as part of commercial products</li></ul>	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.

# 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
  - Including engineering systems

# Project Framework



# Who is OpenDaylight Project?

## Platinum



## Gold



## Silver



[www.opendaylight.org](http://www.opendaylight.org)

# OpenDaylight Simultaneous Release

- OpenDaylight is multi-project
  - 20+ projects in Bootstrap or Incubation State
  - Bringing components together in a simultaneous release
  - CodeName: Hydrogen
  - Planned release date: Dec 12, 2013
- Several “editions” to group related functionality together
  - base, virtualization, service provider
  - *virtualization edition will provide OpenStack integration*

# Simultaneous Release Plan

Milestone	Offset 0 Date	Offset 1 Date	Offset 2 Date	Events
M0	6/24/2013	6/26/2013	6/28/2013	Simultaneous Release Open
M1	7/22/2013	7/24/2013	7/26/2013	<ol style="list-style-type: none"> <li>1. Projects must have declared intent to participate in Simultaneous Release</li> <li>2. Participating Projects must have published a candidate Release Plan for public comment</li> </ol>
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	<ol style="list-style-type: none"> <li>1. API Freeze</li> <li>2. Latest possible Continuous System Test Start</li> </ol>
M5	11/11/2013	11/13/2013	11/15/2013	<ol style="list-style-type: none"> <li>1. Code Freeze (bug fixes only from here)</li> <li>2. String Freeze (all internationalizable strings frozen to allow for translation)</li> <li>3. Latest possible date for commencing User Facing Documentation</li> </ol>
RC0	11/18/2013	11/20/2013	11/22/2013	
RC1	11/25/2013	11/27/2013	11/29/2013	
RC2	12/2/2013	12/4/2013	12/6/2013	Participating Projects must hold their Release Reviews, including User Facing Documentation.
Formal Release	12/9/2013			

03 Feb 2014



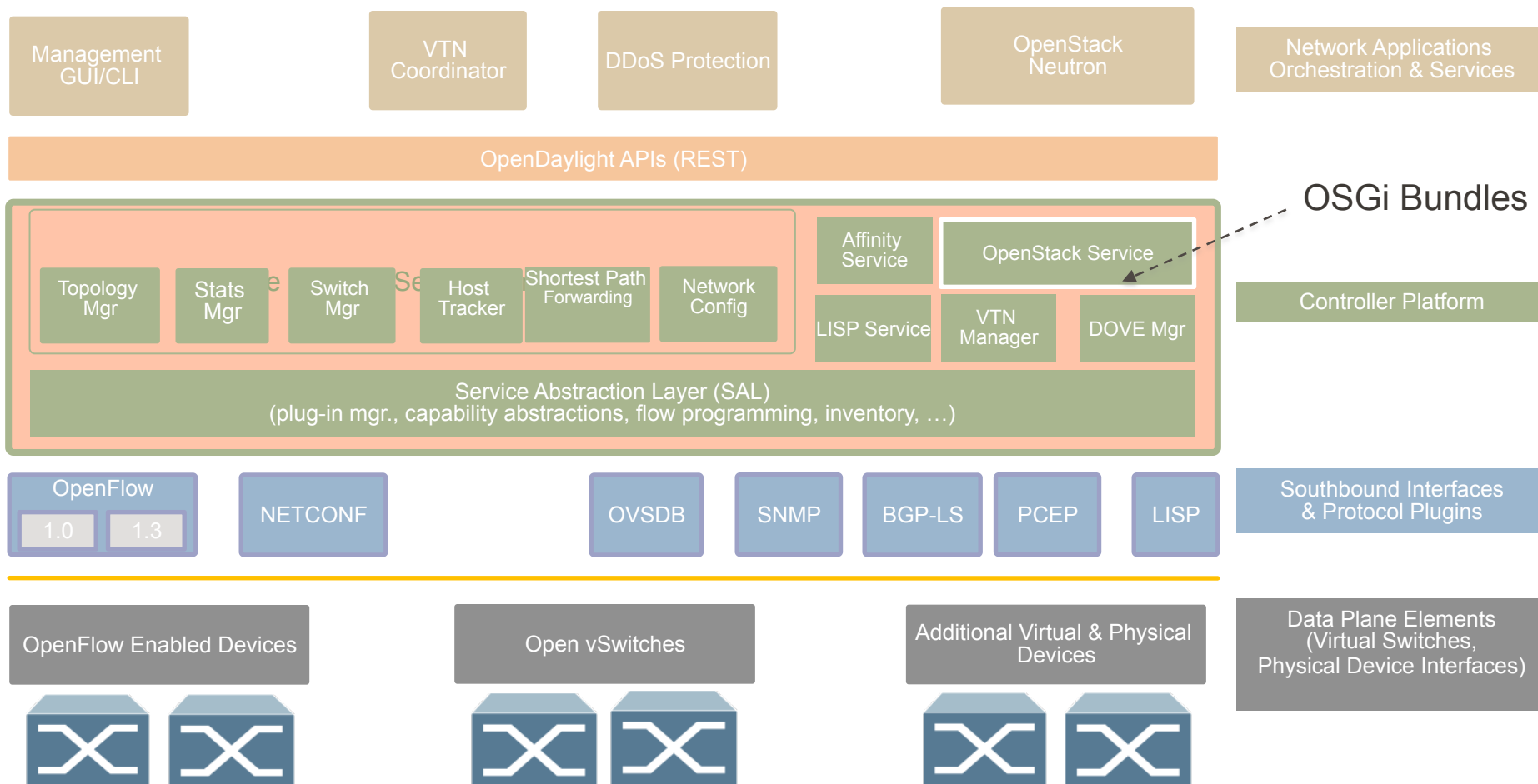
# Impressive List of Projects in H<sub>2</sub>

- [Controller](#)
- [VTN](#)
- [OpenDove](#)
- [Affinity Management Service](#)
- [LISP Mapping Service](#)
- [Yang Tools](#)
- [Defense4All](#)
- [BGP-LS/PCEP](#)
- [OpenFlow Protocol](#)
- [OpenFlow SB Plugin](#)
- [OVSDB](#)
- [SNMP4SDN](#)
- DLUX
- STI





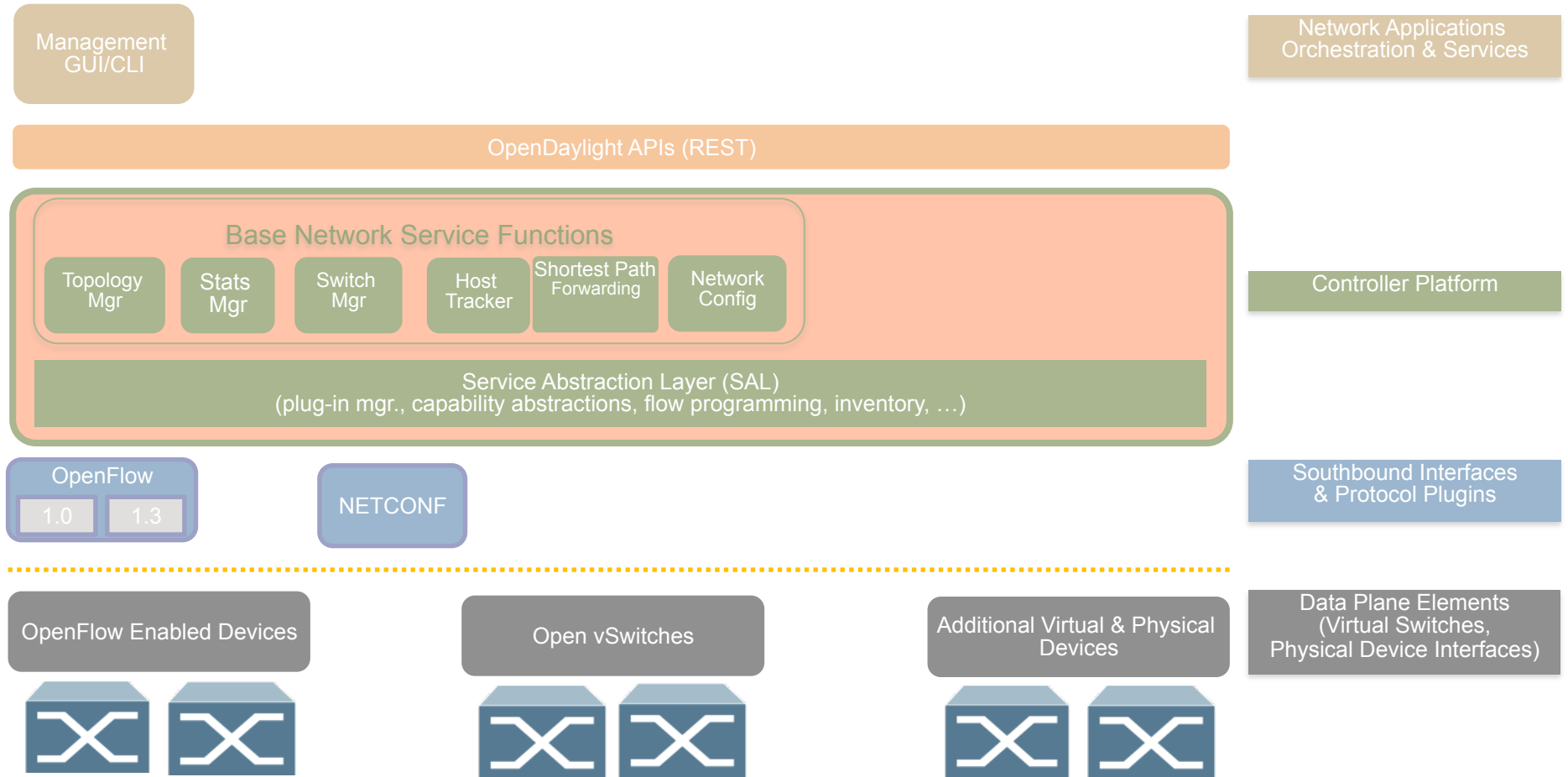
# Hydrogen Release (Jan 2014)



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



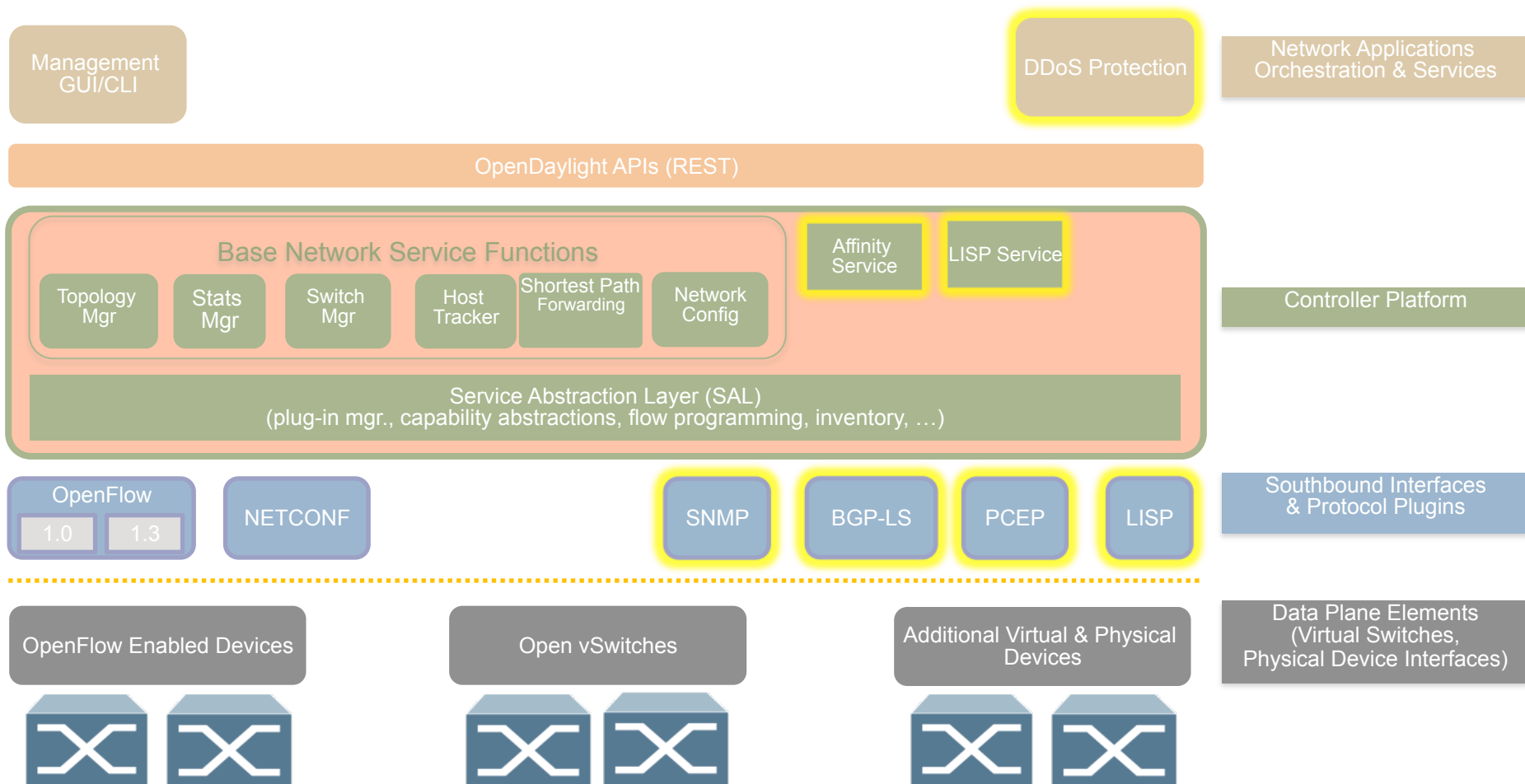
# Base Edition



*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*



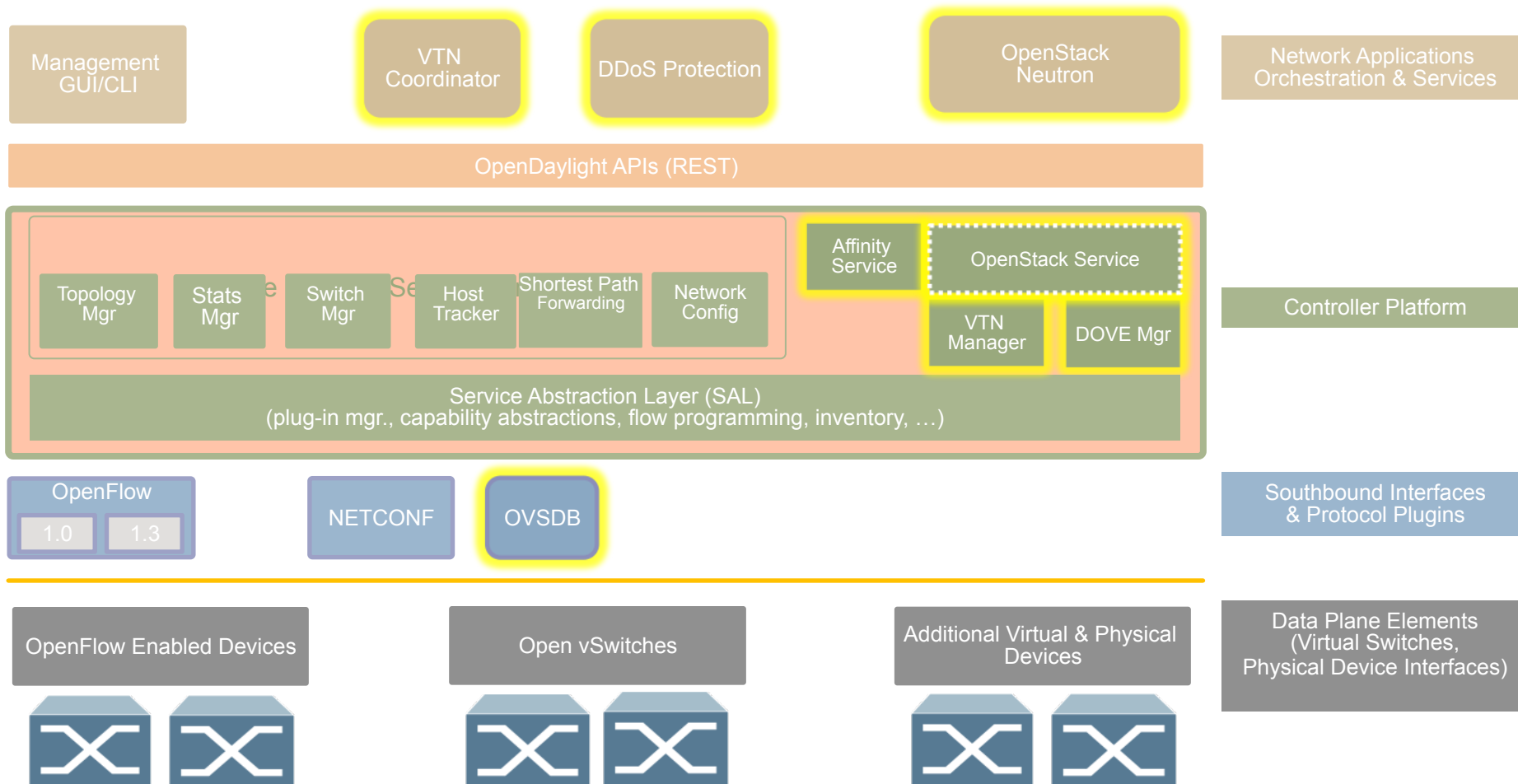
# Service Provider Edition



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

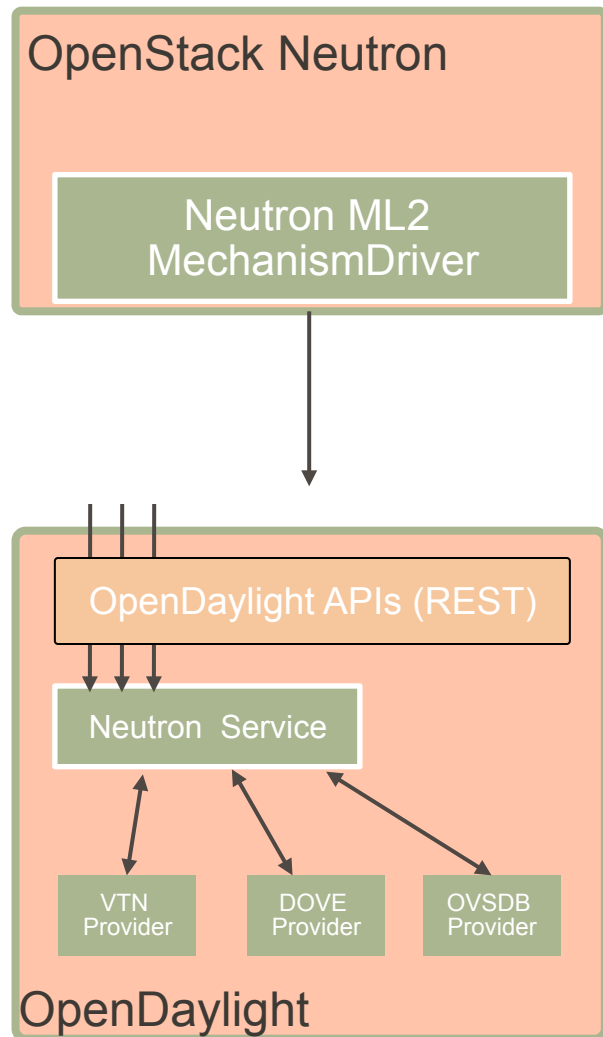


# Virtualization Edition



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

# 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

# Agenda

- What is Hydrogen
- Introduction to Helium
- Next Steps
- Get Involved!

# Introduction to Helium -- Naming

## Periodic Table of Elements

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																		
1 <b>H</b> Hydrogen 1.00794	<div>Atomic #</div> <div>Symbol</div> <div>Name</div> <div>Atomic Mass</div> <div><div><div>C</div>Solid</div><div><div>Hg</div>Liquid</div><div><div>H</div>Gas</div><div><div>Rf</div>Unknown</div></div>																2 <b>He</b> Helium 4.002602																		
3 <b>Li</b> Lithium 6.941	4 <b>Be</b> Beryllium 9.012182	<div>Metals</div> <div>Alkali metals</div> <div>Alkaline earth metals</div> <div>Lanthanoids</div> <div>Actinoids</div> <div>Transition metals</div> <div>Poor metals</div> <div>Nonmetals</div> <div>Other nonmetals</div> <div>Noble gases</div>										5 <b>B</b> Boron 10.811	6 <b>C</b> Carbon 12.0107	7 <b>N</b> Nitrogen 14.0067	8 <b>O</b> Oxygen 15.9994	9 <b>F</b> Fluorine 18.9984032	10 <b>Ne</b> Neon 20.1797																		
11 <b>Na</b> Sodium 22.98976928	12 <b>Mg</b> Magnesium 24.3050	13 <b>Al</b> Aluminum 26.9815386	14 <b>Si</b> Silicon 28.0855	15 <b>P</b> Phosphorus 30.973762	16 <b>S</b> Sulfur 32.065	17 <b>Cl</b> Chlorine 35.453	18 <b>Ar</b> Argon 39.948	19 <b>K</b> Potassium 39.0983	20 <b>Ca</b> Calcium 40.078	21 <b>Sc</b> Scandium 44.955912	22 <b>Ti</b> Titanium 47.867	23 <b>V</b> Vanadium 50.9415	24 <b>Cr</b> Chromium 51.9961	25 <b>Mn</b> Manganese 54.938045	26 <b>Fe</b> Iron 55.845	27 <b>Co</b> Cobalt 58.933195	28 <b>Ni</b> Nickel 58.6934	29 <b>Cu</b> Copper 63.546	30 <b>Zn</b> Zinc 65.38	31 <b>Ga</b> Gallium 69.723	32 <b>Ge</b> Germanium 72.64	33 <b>As</b> Arsenic 74.92160	34 <b>Se</b> Selenium 78.96	35 <b>Br</b> Bromine 79.904	36 <b>Kr</b> Krypton 83.798										
37 <b>Rb</b> Rubidium 85.4678	38 <b>Sr</b> Strontium 87.62	39 <b>Y</b> Yttrium 88.90585	40 <b>Zr</b> Zirconium 91.224	41 <b>Nb</b> Niobium 92.90638	42 <b>Mo</b> Molybdenum 95.95	43 <b>Tc</b> Technetium (97.9072)	44 <b>Ru</b> Ruthenium 101.07	45 <b>Rh</b> Rhodium 102.90550	46 <b>Pd</b> Palladium 106.42	47 <b>Ag</b> Silver 107.8682	48 <b>Cd</b> Cadmium 112.411	49 <b>In</b> Indium 114.818	50 <b>Sn</b> Tin 118.710	51 <b>Sb</b> Antimony 121.760	52 <b>Te</b> Tellurium 127.60	53 <b>I</b> Iodine 126.90447	54 <b>Xe</b> Xenon 131.293	55 <b>Cs</b> Cesium 132.9054519	56 <b>Ba</b> Barium 137.327	57–71	72 <b>Hf</b> Hafnium 178.49	73 <b>Ta</b> Tantalum 180.94788	74 <b>W</b> Tungsten 183.84	75 <b>Re</b> Rhenium 186.207	76 <b>Os</b> Osmium 190.23	77 <b>Ir</b> Iridium 192.217	78 <b>Pt</b> Platinum 195.084	79 <b>Au</b> Gold 196.966569	80 <b>Hg</b> Mercury 200.59	81 <b>Tl</b> Thallium 204.3833	82 <b>Pb</b> Lead 207.2	83 <b>Bi</b> Bismuth 208.98040	84 <b>Po</b> Polonium (209.9824)	85 <b>At</b> Astatine (209.9871)	86 <b>Rn</b> Radon (222.0176)
87 <b>Fr</b> Francium (223)	88 <b>Ra</b> Radium (226)	89–103	104 <b>Rf</b> Rutherfordium (261)	105 <b>Db</b> Dubnium (262)	106 <b>Sg</b> Seaborgium (266)	107 <b>Bh</b> Bohrium (264)	108 <b>Hs</b> Hassium (277)	109 <b>Mt</b> Meitnerium (268)	110 <b>Ds</b> Darmstadtium (271)	111 <b>Rg</b> Roentgenium (272)	112 <b>Uub</b> Ununbium (285)	113 <b>Uut</b> Ununtrium (284)	114 <b>Uuq</b> Ununquadium (289)	115 <b>Uup</b> Ununpentium (288)	116 <b>Uuh</b> Ununhexium (292)	117 <b>Uus</b> Ununseptium (294)	118 <b>Uuo</b> Ununoctium (294)																		
For elements with no stable isotopes, the mass number of the isotope with the longest half-life is in parentheses.																																			
Design and Interface Copyright © 1997 Michael Dayah (michael@dayah.com). <a href="http://www.ptable.com/">http://www.ptable.com/</a>																																			
57 <b>La</b> Lanthanum 138.90547	58 <b>Ce</b> Cerium 140.116	59 <b>Pr</b> Praseodymium 140.90768	60 <b>Nd</b> Neodymium 144.242	61 <b>Pm</b> Promethium (145)	62 <b>Sm</b> Samarium 150.36	63 <b>Eu</b> Europium 151.964	64 <b>Gd</b> Gadolinium 157.25	65 <b>Tb</b> Terbium 158.92535	66 <b>Dy</b> Dysprosium 162.500	67 <b>Ho</b> Holmium 164.93032	68 <b>Er</b> Erbium 167.259	69 <b>Tm</b> Thulium 168.93421	70 <b>Yb</b> Ytterbium 173.054	71 <b>Lu</b> Lutetium 174.9668	89 <b>Ac</b> Actinium (227)	90 <b>Th</b> Thorium 232.03806	91 <b>Pa</b> Protactinium 231.03588	92 <b>U</b> Uranium 238.02891	93 <b>Np</b> Neptunium (237)	94 <b>Pu</b> Plutonium (244)	95 <b>Am</b> Americium (243)	96 <b>Cm</b> Curium (247)	97 <b>Bk</b> Berkelium (247)	98 <b>Cf</b> Californium (251)	99 <b>Es</b> Einsteinium (252)	100 <b>Fm</b> Fermium (257)	101 <b>Md</b> Mendelevium (258)	102 <b>No</b> Nobelium (259)	103 <b>Lr</b> Lawrencium (262)						

# Helium Simultaneous Release Plan

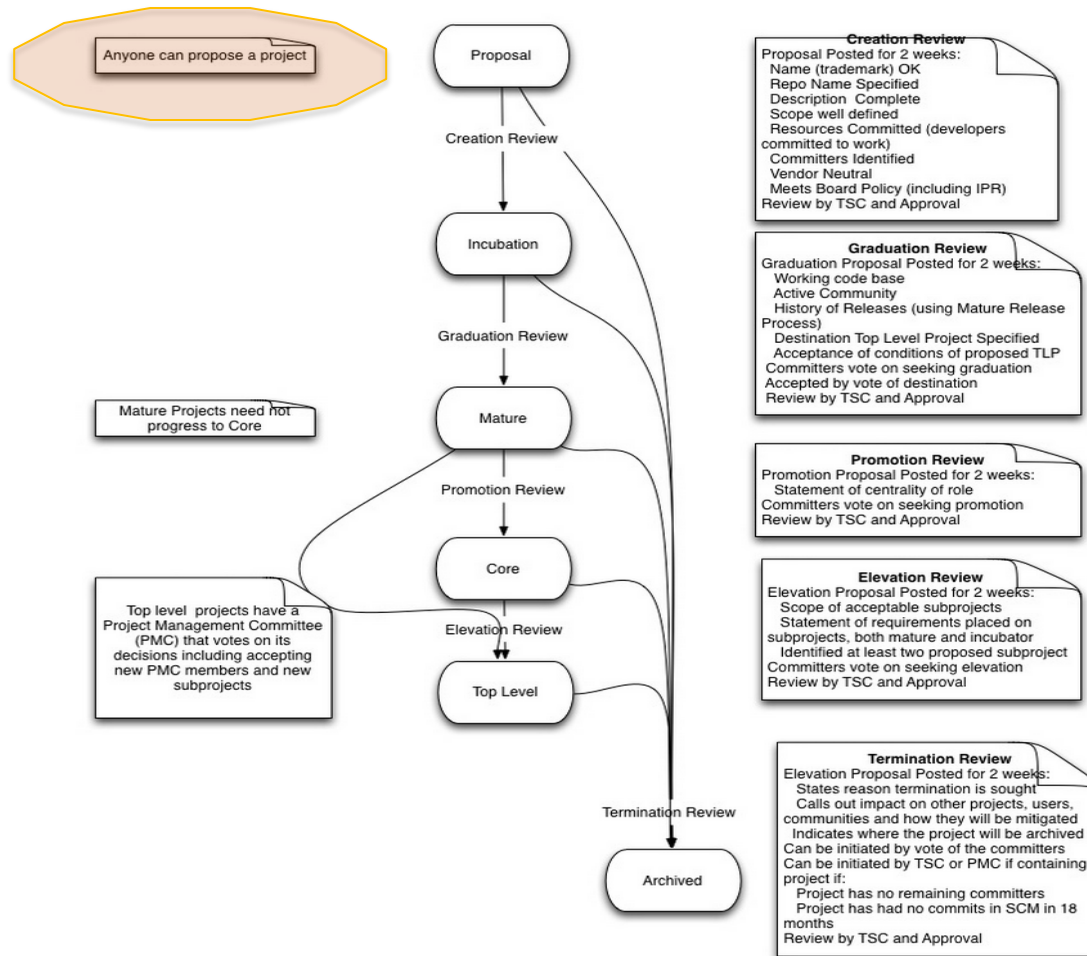
Milestone	Date	Events
M0	4/14/2014	Simultaneous Release Open
Last call for new projects eligible to join	4/30/2014	This is the latest date a project proposal can be brought and still have the two week public comment period before its project creation review at the last TSC meeting before it needs to declare its intent to join the Simultaneous Release at M1.
M1	5/12/2014	<ol style="list-style-type: none"> <li>1. Projects must have declared intent to participate in Simultaneous Release</li> <li>2. Participating Projects must have published a candidate Release Plan for public comment ( <a href="#">Release Plan Template</a> )</li> <li>3. TSC commits to initiate public discussion of Lithium Simultaneous Release Plan</li> </ol>
M2	6/09/2014	<ol style="list-style-type: none"> <li>1. Participating Projects must have declared their final Release Plan</li> <li>2. TSC commits to finalize basic dates and Milestones for the Lithium Simultaneous Release Plan (some details of requirements and Milestone contents may be decided later).</li> <li>3. TSC commits to initiate public discussion of Release Vehicles</li> </ol>
M3	7/07/2014	<ol style="list-style-type: none"> <li>1. Latest possible Continuous Integration Test Start</li> <li>2. TSC commits to decide on Final Release Vehicles Defined</li> <li>3. Latest possible date for commencing Documentation</li> </ol>
M4	8/04/2014	<ol style="list-style-type: none"> <li>1. API Freeze</li> <li>2. Latest possible Continuous System Test Start</li> <li>3. TSC commits to begin public discussion of Stable Update Expectations</li> </ol>
M5	9/1/2014	<ol style="list-style-type: none"> <li>1. Code Freeze (bug fixes only from here)</li> <li>2. String Freeze (all internationalizable strings frozen to allow for translation)</li> <li>3. TSC commits to have finalized Stable Update Expectations</li> </ol>
RC0	9/9/2014	
RC1	9/15/2014	
RC2	9/22/2014	Participating Projects must hold their Release Reviews, including User Facing Documentation.
Formal Helium Release	9/29/2014	<ol style="list-style-type: none"> <li>1. Formal Helium Release</li> <li>2. Latest possible date for each project to add a stable/helium branch</li> </ol>
SU1 (Stable Update 1 aka Helium.1)	11/10/2014	First Stable Update for Helium. See <a href="#">Stable Update</a> section. NOTE: This date is provisional, but will not move earlier. Please note, event based Updates (security/critical bugs) are distinct and may occur at any point.
SU2 (Stable Update 2 aka Helium.2)	01/12/2015	Second Stable Update for Helium. See <a href="#">Stable Update</a> section. NOTE: This date is provisional, but will not move earlier. Please note, event based Updates (security/critical bugs) are distinct and may occur at any point.

# What's in the queue for Helium?

(projects that have advanced to Incubation state)

- Group Based Policy Plugin (Application Policy Plugin)
- Packet Cable PCMM Manager
- SDNi App
- Southbound Plugin to the OpenContrail Platform
- L2 Switch
- Secure Network Bootstrapping Infrastructure
- AAA Service
- ODL Toolkit
- Dynamic Resource Reservation
- TTPs
- Opflex
- Root Parent
- Documentation
- And more...
- [https://wiki.opendaylight.org/view/Project\\_Proposals:Main](https://wiki.opendaylight.org/view/Project_Proposals:Main)

# Brief Note on Project Lifecycles



# Agenda

- What is Hydrogen
- Introduction to Helium
- Next Steps – Beyond Helium
- Get Involved!

# Lithium?

- Release after Helium
- Target Release Date: 04.20.2015
- Simultaneous Release Plan
- Regularized/Deterministic Release Cadence
- Too early for projects

# Lithium Simultaneous Release Plan

Milestone	Date	Events
M0	10/6/2014	Simultaneous Release Open
Last call for new projects eligible to join	10/17/2014	This is the latest date a project proposal can be brought and still have the two week public comment period before its project creation review at the last TSC meeting before it needs to declare its intent to join the Simultaneous Release at M1.
M1	11/6/2014	<ol style="list-style-type: none"> <li>1. Projects must have declared intent to participate in Simultaneous Release</li> <li>2. Participating Projects must have published a candidate Release Plan for public comment ( <a href="#">Release Plan Template</a> )</li> <li>3. TSC commits to initiate public discussion of Lithium Simultaneous Release Plan</li> </ol>
M2	12/12/2014	<ol style="list-style-type: none"> <li>1. Participating Projects must have declared their final Release Plan</li> <li>2. TSC commits to finalize basic dates and Milestones for the Lithium Simultaneous Release Plan (some details of requirements and Milestone contents may be decided later).</li> <li>3. TSC commits to initiate public discussion of Release Vehicles</li> </ol>
M3	1/23/2015	<ol style="list-style-type: none"> <li>1. Latest possible Continuous Integration Test Start</li> <li>2. TSC commits to decide on Final Release Vehicles Defined</li> <li>3. Latest possible date for commencing Documentation</li> </ol>
M4	2/20/2015	<ol style="list-style-type: none"> <li>1. API Freeze</li> <li>2. Latest possible Continuous System Test Start</li> <li>3. TSC commits to begin public discussion of Stable Update Expectations</li> </ol>
M5	3/23/2015	<ol style="list-style-type: none"> <li>1. Code Freeze (bug fixes only from here)</li> <li>2. String Freeze (all internationalizable strings frozen to allow for translation)</li> <li>3. TSC commits to have finalized Stable Update Expectations</li> </ol>
RC0	3/30/2015	
RC1	4/6/2015	
RC2	4/13/2015	Participating Projects must hold their Release Reviews, including User Facing Documentation.
Formal Lithium Release	4/20/2015	<ol style="list-style-type: none"> <li>1. Formal Lithium Release</li> <li>2. Latest possible date for each project to add a stable/Lithium branch</li> </ol>
SU1 (Stable Update 1 aka Lithium.1)	6/1/2015	First Stable Update for Lithium. See <a href="#">Stable Update</a> section. NOTE: This date is provisional, but will not move earlier. Please note, event based Updates (security/critical bugs) are distinct and may occur at any point.
SU2 (Stable Update 2 aka Lithium.2)	7/13/2015	Second Stable Update for Lithium. See <a href="#">Stable Update</a> section. NOTE: This date is provisional, but will not move earlier. Please note, event based Updates (security/critical bugs) are distinct and may occur at any point.

# Agenda

- What is Hydrogen
  - A bit of personal learning
- Introduction to Helium
- Next Steps – Beyond Helium
- Get Involved!

# Agenda

- What is Hydrogen
  - A bit of personal learning
- Introduction to Helium
- Next Steps – Beyond Helium
- Get Involved!

# Network Programmability

Program

Provision

Configure



# Get involved!

- Sanity check for protocol matching
- Implementing standards in code
- Best place to chase the pyramid
- IRC (freenode):  
#opendaylight
- Twitter also good





# Thanks!

