BGP: Lithium: Release Notes

Contents

Major Features

Lithium release of BGPCEP project delivers the support for the two protocols and applications which tie the protocols to the controller's MD-SAL infrastructure.

BGP support

- Core Border Gateway Protocol
    - RFC1997 - BGP Communities Attribute
    - RFC4271 - A Border Gateway Protocol 4 (BGP-4)
    - RFC4360 - BGP Extended Communities Attribute
    - RFC4486 - Subcodes for BGP Cease Notification Message
    - RFC4760 - Multiprotocol Extensions for BGP-4
    - RFC5004 - Avoid BGP Best Path Transitions from One External to Another
    - RFC5492 - Capabilities Advertisement with BGP-4
    - RFC5575 - Dissemination of Flow Specification Rules
    - RFC6286 - Autonomous-System-Wide Unique BGP Identifier for BGP-4
    - RFC6793 - BGP Support for Four-Octet Autonomous System (AS) Number Space
    - RFC7311 - The Accumulated IGP Metric Attribute for BGP

- Extended AFI/SAFI support
    - draft-ietf-idr-ls-distribution-04 - North-Bound Distribution of Link-State and TE Information using BGP
- Segment Routing for BGP
    - draft-gredler-idr-bgp-ls-segment-routing-extension - BGP Link-State extensions for Segment Routing

PCEP support

- Core Path Computation Element Protocol
    - RFC5440 - Path Computation Element (PCE) Communication Protocol (PCEP)
    - RFC5455 - Diffserv-Aware Class-Type Object for the Path Computation Element Communication Protocol
    - RFC5521 - Extensions to the Path Computation Element Communication Protocol (PCEP) for Route Exclusions
    - RFC5541 - Encoding of Objective Functions in the Path Computation Element Communication Protocol (PCEP)
    - RFC5557 - Path Computation Element Communication Protocol (PCEP) Requirements and Protocol Extensions in Support of Global Concurrent Optimization
    - RFC5886 - A Set of Monitoring Tools for Path Computation Element (PCE)-Based Architecture
- Stateful extensions to the Patch Computation Element Protocol, December 2013
    - draft-ietf-pce-stateful-pce-07 - PCEP Extensions for Stateful PCE
- Segment routing extension to the Path Computation Element Protocol, April 2015
    - draft-ietf-pce-segment-routing-01 - PCEP Extension for segment routing
    - draft-ietf-pce-lsp-setup-type-01 - PCEP Extension for path setup type
- Secure Transport for PCEP, March 2015
    - draft-ietf-pce-pceps-03 - Secure Transport for PCEP

MD-SAL applications

- BGP Local/Remote Routing Information Base export
- Export of BGP/LS-sourced information to Level 3 (L3) Interior Gateway Protocol (IGP) Topology
- Export of PCEP-sourced Label Switched Path information as a Network Topology and support for initiating them

Programming pipeline

- Proposal for a north-bound programming pipeline, which can perform optimistic instruction scheduling and parallel execution. Used in the PCEP initiation interface.

Target Environment

For Execution

For Development

Known Issues and Limitations

Few issues were observed when using ODL for multiple peers (and at least one of them was ebgp):

BUG-3839 - ASpath segment count wrong when having multiple segments

BUG-3830 - Uptodate conflicting having 1+ peers in BGP

BUG-3840 - 2 peers with different advertised AFIs cause Node does not exist

They are targeted for Lithium-SR1.

Migrating from Helium to Lithium

Features

To gain user more control over features in BGPCEP we decided to split Helium existing feature *odl-bgpcep-all* into *odl-bgpcep-bgp-all* and *odl-bgpcep-pcep-all*. This way you can choose if you only want all PCEP features installed along/without BGP features. The content of the features has not changed.

BGP

- bgp-inet

One major change in APIs was moving basic ipv4/ipv6 routes outside main bgp-rib model. This means change in namespace from: *urn:opendaylight:params:xml:ns:yang:bgp-rib* to *urn:opendaylight:params:xml:ns:yang:bgp-inet*.

PCEP

There was no change in APIs that would result in a problem when migrating your code to Lithium. However it is strongly advise to use PCEP stateful07 extension instead of stateful02, as this one will be deprecated in Beryllium.