Abstract

This document is a report of implementations based on [IDR-SLA]. [IDR-SLA] introduces a new BGP attribute to exchange QoS SLA parameters between BGP peers. Current status of the implementation report covers Cisco implementation on 2 different OS, ExaBGP implementation and inter-operability results between them.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at http://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on February 17, 2017.

Copyright Notice

Copyright (c) 2016 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust’s Legal Provisions Relating to IETF Documents (http://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.
1. Implementations and interoperability

<table>
<thead>
<tr>
<th></th>
<th>Cisco IOS</th>
<th>Cisco NX-OS</th>
<th>ExaBGP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco IOS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Cisco NX-OS</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The ExaBGP implementation report is based on a version that is implemented as a receiver.

1.1. Survey of Operations

Optional transitive attribute:
* Is QoS attribute implemented as an optional transitive attribute
  - Yes

Local QoS SLA policy enablement:
* When QoS SLA policy enablement triggers an explicit BGP update message with QoS attribute and SLA sub-type content, has an attribute’s highest order bit, in the QoS attribute flag, set to 1? This is to indicate receiver to drop the message on reception.
  - Yes

Is implementation capable of QoS SLA advertisement in the context of advertised NLRI? with source AS = 0 in the QoS SLA attribute
- did not implement

Is implementation capable of advertising QoS SLA with explicit source and destination AS encoded?
- Yes, Current ExaBGP version of implementation ignores encoded AS
First trigger for QoS SLA advertisement:
At the first trigger for SLA advertisement, a sender advertises SLA parameters with an unique SLA id?
- Yes

Acting as a receiver, is implementation capable to learn an advertised QoS attribute and SLA parameters
- Yes

Updating previously advertised QoS SLA:
On an event detecting update to earlier advertised SLA, sender picks the same SLA id, advertised before, and signals new SLA parameters in its entirety. No delta updates.
- Yes

Acting as a receiver, is implementation capable to replace SLA parameters learned previously?
- Yes, ExaBGP implementation validated to interpret received SLA parameters. It is not implemented with persistent state to map to next BGP update with the same SLA identifier

Invalidation of previously advertised SLA:
On an event to invalidate previously advertised SLA parameters, a BGP update message is sent to the same destination AS with the same SLA id, advertised before, with SLA message containing 0 Traffic Class count.
- Yes

Acting as a receiver, is implementation capable to remove previously learned QoS SLA parameters?
- Yes, This capability not yet implemented in ExaBGP

QoS SLA advertisement for point to point connection:
Is implementation capable to advertise SLA for the destination that is next hop
- Yes

QoS SLA advertisement for destination multiple hops away:
Is implementation capable to advertise SLA for the destination that is multiple hops away?
- Yes
None of the forwarding nodes modify the content of the QoS SLA parameters?
- Yes

Inter-operability with nodes not supporting this attribute:
Is interoperability tested to make sure this optional transitive attribute is forwarded without any impact through the nodes that do not implement support of this attribute
- Yes

Attributes implemented:
Cisco:
  Direction
    incoming
    outgoing
  Traffic Class Count
  Traffic Class Description
  Traffic Class Elements Count
  Classifier Element values
    ipDiffServCodePoint
  Traffic Class Service Count
  Service Attributes:
    Traffic_CLASS_TSPEC
    MINRATE_IN_PROFILE_MARKING
    MINRTE_OUT_PROFILE_MARKING
    RELATIVE_PRIORITY

2. Suggestions for the future

The proposed draft is to define message to exchange SLA parameters between two nodes. The SLA specification does not make any assumption about provisioning. It is not required though it would be nice if provisioning is aligned with SLA specification [IDR-SLA] and thus providing a consistent way of mapping between provisioning and messaging.

3. Acknowledgements

Thanks to Ruta Vaidya for providing data on Cisco implementation.
Thanks To Thomas Mangin for his guidance during ExaBGP implementation.
4. Security Considerations

No Security considerations are required for the report presented in this document.

5. Normative References


Authors’ Addresses

Shitanshu Shah
Cisco Systems
170 W. Tasman Drive
San Jose, CA  95134
US

Email: svshah@cisco.com

Keyur Patel
Cisco Systems
170 W. Tasman Drive
San Jose, CA  95134
US

Email: keyupate@cisco.com