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Inter-domain SLA Exchange Implementation Report-02  
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## 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

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## Table of Contents

<a href="#">1.</a>	Implementations and interoperability . . . . .	<a href="#">2</a>
<a href="#">1.1.</a>	Survey of Operations . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Suggestions for the future . . . . .	<a href="#">4</a>
<a href="#">3.</a>	Acknowledgements . . . . .	<a href="#">4</a>
<a href="#">4.</a>	Security Considerations . . . . .	<a href="#">5</a>
<a href="#">5.</a>	Normative References . . . . .	<a href="#">5</a>
	Authors' Addresses . . . . .	<a href="#">5</a>

[1.](#) Implementations and interoperability

	Cisco IOS	Cisco NX-OS	ExaBGP
Cisco IOS	Y	Y	Y
Cisco NX-OS	Y	Y	

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 a 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

## [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.  
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Expires February 17, 2017

[Page 4]

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Internet-Draft IDR SLA Exchange Implementation Report

August 2016

## [4.](#) Security Considerations

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

## [5.](#) Normative References

[IDR-SLA] Shah, S., Patel, K., Bajaj, S., Tomotaki, L., and M. Boucadair, "Inter-domain SLA Exchange, I-D.[draft-ietf-idr-sla-exchange](#)", April 2015.

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