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Implementation Report for BGP FlowSpec RPD draft-wu-idr-flowspec-rpd-impl-00

Abstract

BGP FlowSpec Extensions for Routing Policy Distribution (RPD) has provided a mechanism to use BGP Flowspec address family as routing-policy distribution protocol.

This document provides an implementation report for RPD mechanism on inbound-traffic and outbound-traffic adjustment scenarios. What's more, it gives some details and consideration for exceptions during development and verification.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

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[1.](#) Introduction

To facilitate the traffic optimization in a traditional IP network, an automatic mechanism called BGP Flowspec RPD [[I-D.li-idr-flowspec-rpd](#)] is introduced. This document provides an implementation report for this RPD mechanism on inbound-traffic and outbound-traffic adjustment scenarios. What's more, it gives some details and consideration for exceptions during development and verification.

[2.](#) Implementation Detail

[2.1.](#) Roles

- o Policy Makers: sender, encode and populate BGP Flowspec routes based on policies input from manual configuration or automatic generated rules.

- o Routers: receiver, decode BGP Flowspec routes from Policy Makers and behave accordingly.

2.2. Features

- o FlowSpec Traffic Actions, covered section 5.1 of [[I-D.li-idr-flowspec-rpd](#)].
- o BGP Policy Attribute, NOT covered section 5.2 of [[I-D.li-idr-flowspec-rpd](#)].
- o BGP Wide Community, covered section 5.3 of [[I-D.li-idr-flowspec-rpd](#)].
- o Capability Negotiation, covered section 5.4 of [[I-D.li-idr-flowspec-rpd](#)].

2.3. Platforms

- o VRP
 - * Release: VRPV800R010C00
 - * Vendor: Huawei
 - * Role: Router
 - * Contact: Eric Wu, Shankara
 - * Email: eric.wu@huawei.com, shankara@huawei.com
- o SNC
 - * Release: SNCV100R001C50
 - * Vendor: Huawei

- * Role: Policy Maker
- * Contact: Eric Wu, Shankara
- * Email: eric.wu@huawei.com, shankara@huawei.com

3. Exception Consideration

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3.1. Transitive Wide Community

As specified in [[I-D.ietf-idr-wide-bgp-communities](#)], "The Wide BGP Community Attribute is an optional, transitive BGP attribute, and may be present only once in the BGP UPDATE message." In RPD's cases, the policy maker can only have access to those routers in its domain. And it is unnecessary and not safe for the border routers(IGW) to populate RPD route(BGP Flowspec) into another AS. In our implementation, a "NO_ADVERTISE" community is attached by the policy maker to make sure that. So in RPD's cases the wide community will not be "transitive" even when the Flowspec Address Family has been enabled on the inter-AS session.

3.2. Unnecessary Flowspec Population

In RPD's cases, all border routers (IGW) will get BGP Flowspec routes update from the policy maker even though only one of them is the real receiver. Because of BGP's P2MP route population style, IGWs will receive unnecessary updates which will consume extra resource to maintain them. In our implementation, more information is attached with routes to identify who is the corresponding executor. Better solution SHOULD be sending the route to the real receiver only.

3.3. Network Route Selection

RPD mechanism changes traffic behavior through affecting the decision in control plane. In both inbound and outbound scenarios, those newly preferred routes will be propagated to other BGP peers, which may impact route selection of the whole network in the end. Even

though this is the basic protocol behavior, it may generate unexpected consequence on network forwarding. Better solution SHOULD consider how to eliminate this negative impact.

[4.](#) Future Work

1. More platform. More implementation will be available on different platforms, including open source.
2. Interoperability. Plan to do interoperation test on different platforms when they are ready.
3. Operator Deployment. Operators are interested in testing and deploy RPD mechanism. Deployment report may be available in future.

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[5.](#) IANA Considerations

This draft has no request to IANA.

[6.](#) Security Considerations

This draft has no security issue introduced.

[7.](#) Acknowledgements

The authors would like to thank Weisu Qi, Haijun Xu, Shunwan Zhuang for their constructive help to this work.

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