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ExtCommunity map and carry TOS value of IP header

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Abstract

This document defines a new BGP Extended Community, which can map the value of IP TOS. Then, the Extended Community can classified the route information at the same time can carry the value of TOS which will apply into the IP packet. Then BGP and QoS have correlation when we apply the QoS policy based on BGP, it will be simple.

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[1.](#) Introduction

Since BGP community can only classify routing information,if you want to apply QoS policy based on BGP ,you can use BGP community to classify route information, then apply the TOS or some other QoS policy based on the classified route information.

If BGP Extended Community can map TOS value of IP header at the same time and keep the ability for classifying route information,the QoS policy based on BGP will be simple.

[2.](#) The BGP Extended Community map value of TOS

In this document, we define the capability of Extended Community map and carry the TOS value of IP header. When BGP import route information, this Extended Community can be push or be apply by route policy, then BGP route information can carry the TOS value of IP header.

[3.](#) Format of BGP ExtCommunity

The BGP Extended Community is encoded as an eight octet quantity.

In this document, we define the Format of the BGP Extended Community as follows:

- Type Field : 1 octets
- TOS Value Field : 1 octets
- Value Field : Remaining octets

Type Field - the value mark the IANA regist information of BGP Extended Community and the format of the Value Field

TOS Value Field - the value mark the TOS value that will be carried by the stream matched correlation networking information

Value Field - the value mark the classified route information

```

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| Type Field      |TOS Value Field|          Value Field          |
+-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                  Value Field                                |
+-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+

```

3.1 The Type Field

The size of Type Field for Regular types is 1 octet as shown below

```

0 1 2 3 4 5 6 7
+-+--+--+--+--+--+
|I|T| spare |V|
+-+--+--+--+--+--+

```

I - IANA authority bit

T - TOS bit

Value 0: The TOS Value Field mark the default value 0

value 1: The TOS Value Field mark the value which would be remarked the IP packet

V - The value of this bit which can identify the format of the Value Field

Value 0: The high-order two octets of the Value Field is administrator Field, the remaining octets is sub-administrator Field

Value 1: The high-order four octets of the Value Field is administrator Field, the remaining octets is sub-administrator Field

3.2 TOS Value Field

The default value of TOS Value Field is 0. When the route information be imported into BGP, we can define the TOS Field value that the route informatin should carried.

According to defined DSCP value, we will define such BGP Extended Community:

ExtCommunity name	the high-order six bits of TOS Value Field	DSCP classes	DSCP values
ExtCom-EF	101110	EF	101110
ExtCom-AF41	100010	AF41	100010
ExtCom-AF42	100100	AF42	100100
ExtCom-AF43	100110	AF43	100110
ExtCom-AF31	011010	AF31	011010
ExtCom-AF32	011100	AF32	011100
ExtCom-AF33	011110	AF33	011110
ExtCom-AF21	010010	AF21	010010
ExtCom-AF22	010100	AF22	010100
ExtCom-AF23	010110	AF23	010110
ExtCom-AF11	001010	AF11	001010
ExtCom-AF12	001100	AF12	001100
ExtCom-AF13	001110	AF13	001110
ExtCom-BF	000000	BF	000000

The remaining bits of TOS Value Field use 0 as value.

3.3 Value Field

The Value Field used for identifying the route information which belong to different community.

We can set and change the value of the Value Field, and can't impact the other Field.

4. Security Considerations

This document does not introduce new security issues.

5. References

- [IP] Postel "INTERNET PROTOCOL (IP)", [RFC 791](#), September 1981.
- [DS Field] K. Nichols, S. Blake, F. Baker, and D. Black, "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers", [RFC 2474](#), December 1998.
- [Architecture for DS] S. Blake, D. Black, M. Carlson, E. Davies, Z. Wang and W. Weiss "An Architecture for Differentiated Services" [RFC 2475](#), December 1998.

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