

TEAS Working Group
Internet Draft

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Intended status: Standard Track
Expires: April 23, 2017

October 24, 2016

PCEP Extension for Native IP Network
draft-wang-pcep-extension-native-ip-00.txt

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Abstract

This document defines the PCEP extension for PCE application in Native IP network. The scenario and architecture of PCE in native IP is described in [I-D.[draft-wang-teas-pce-native-ip-01.txt](#)]. This draft describes the key information that is transferred between PCE and PCC to accomplish the end2end traffic assurance in Native IP network under central control mode.

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[1](#). Introduction


```

| Object-Class | OT |Res|P|I| Object Length (bytes) |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|
// (Object body) //
|

```

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+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

Different object-class, object type and the corresponding object body is defined separated in the following section.

4.1. BGP PEER Object.

The BGP PEER object is used in a PCE Initiate message [[draft-ietf-pce-pce-initiated-lsp](#)] to specify the ip address of BGP peer that the received network device should establish the BGP relationship with.

This Object should only be sent to the head and end router of the end2end path in case there is no RR involved. If the RR is used between the head end routers, then such information should be sent to head router/RR and end router/RR respectively.

BGP PEER Object Object-Class is **

BGP PEER Object Object-Type is **

```

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
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Peer-Id | AT |Resv.
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| IP Address of BGP Peer(4/16 Bytes) |
// IP Address of BGP Peer(4/16 Bytes) //

```



```

| Peer-Id | AT | Resv. | Prefixes Num.
+-----+
| BGP Advertised IP Prefix TLV |
// BGP Advertised IP Prefix TLV //
| BGP Advertised IP Prefix TLV |
+-----+

```

Peer-Id(8 bits): To indicate which BGP peer should be used to advertise the following IP Prefix TLV. This value is assigned in the BGP PEER object and is referred in this object.

AT(8 bits): Address Type. To indicate the address type of BGP Peer. Equal to 4, if the following IP address of BGP peer is belong to IPv4; Equal to 6 if the following IP address of BGP peer is belong to IPv6.

Resv(8 bits): Reserved for future use.

Prefixes Num(8 bits): Number of prefixes that advertised by the corresponding BGP Peer. It should be equal to num of the following IP prefix TLV.

BGP Advertised IP Prefix TLV: Variable Length, use the TLV format to indicate the advertised IP Prefix.

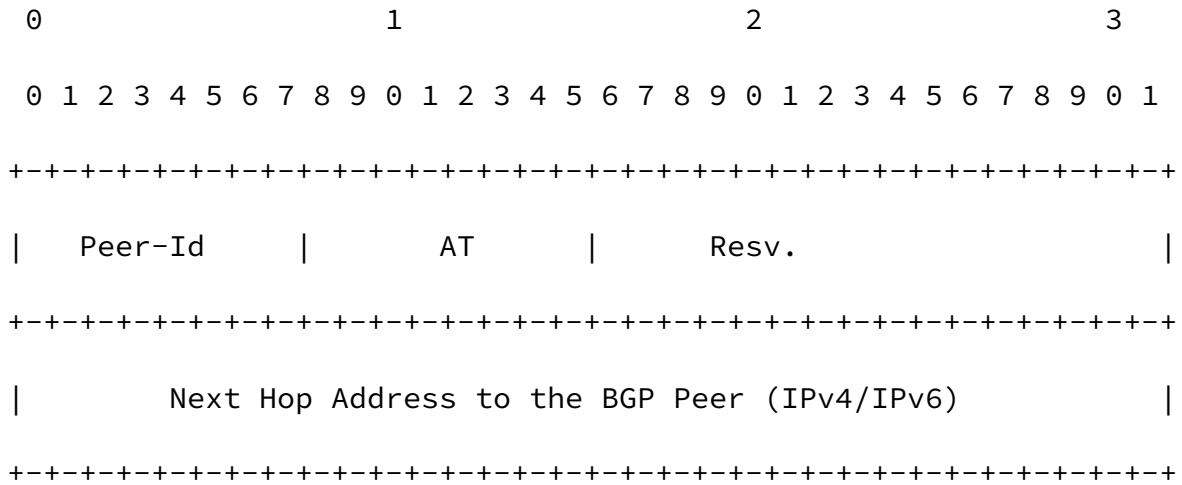
4.3. STATICROUTE Object

THE STATICROUTE Object is carried in a PCE Initiate message [[draft-ietf-pce-pce-initiated-lsp](#)] to specify the static route to the corresponding BGP peer address on each device that is on the end2end assurance path.

This Object should be sent to all the devices that locates on the end2end assurance path that calculated by PCE.

STATICROUTE Object Object-Class is **

STATICROUTE Object Object-Type is **



Peer-Id(8 bits): To indicate the BGP peer that the following next hop address point to. This value is assigned in the BGP PEER object and is referred in this object.

AT(8 bits): Address Type. To indicate the address type of staticroute. Equal to 4, if the following next hop address to the BGP peer is belong to IPv4; Equal to 6 if the following next hop address to the BGP peer is belong to IPv6.

Resv(16 bits): Reserved for future use.

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 Next Hop Address to the BGP Peer TLV: Variable Length, use the TLV format to indicate the next hop address to the corresponding BGP peer that indicated by the Peer-Id.

- 5. Management Consideration.
- 6. Security Considerations
TBD
- 7. IANA Considerations
TBD
- 8. Conclusions

TBD

9. References

9.1. Normative References

[RFC4655] Farrel, A., Vasseur, J.-P., and J. Ash, "A Path Computation Element (PCE)-Based Architecture", RFC 4655, August 2006, <<http://www.rfc-editor.org/info/rfc4655>>.

[RFC5440] Vasseur, JP., Ed., and JL. Le Roux, Ed., "Path Computation Element (PCE) Communication Protocol (PCEP)", [RFC 5440](#), March 2009, <<http://www.rfc-editor.org/info/rfc5440>>.

9.2. Informative References

[I-D.[draft-ietf-pce-pce-initiated-lsp-07](#)]
E.Crabbe, I.Minei, S.Sivabalan, R.Varga, "PCEP Extensions for PCE-initiated LSP Setup in a Stateful PCE Model", <https://tools.ietf.org/html/draft-ietf-pce-pce-initiated-lsp-07> (work in progress), July, 2016

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Expires December 30,2016

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[I-D.[draft-wang-teas-pce-native-ip-01](#)]

Aijun Wang, Quintin Zhao, Boris Khasanov, Raghavendra Mallya, "PCE in Native IP Network", <https://tools.ietf.org/html/draft-wang-teas-pce-native-ip-01>(work in progress),October, 2016

[I-D.[draft-zhao-teas-pce-control-function](#)]

Farrel, Q.Zhao "An Architecture for use of PCE and PCEP in a Network with Central Control"

<https://datatracker.ietf.org/doc/draft-zhao-teas-pce-control-function/> (work in progress),June, 2016

10. Acknowledgments

TBD

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