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Label Advertisement Discipline for LDP FECs

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Abstract

The label advertising behavior of an LDP speaker for a given FEC is governed by the FEC type and not necessarily by the LDP session's negotiated label advertisement mode. This document updates [RFC 5036](#) to make that fact clear, as well as updates [RFC 3212](#), [RFC 4447](#), [RFC 5918](#), [RFC 6388](#), and [RFC 7140](#) by specifying the label advertisement mode for all currently defined LDP FEC types.

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1. Introduction

Label Distribution Protocol (LDP) [[RFC5036](#)] allows label advertisement mode negotiation at the time of session establishment. LDP specification also dictates that only single label advertisement mode is negotiated, agreed and used for a given LDP session between two LSRs.

The negotiated label advertisement mode defined in [RFC 5036](#) and carried in the LDP Initialization message is only indicative. It indicates how the LDP speakers on a session will advertise labels for some FECs, but it is not a rule that restricts the speakers to behave in a specific way. Furthermore, for some FEC types the advertising behavior of the LDP speaker is governed by the FEC type and not by

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the negotiated behavior.

This document updates [\[RFC5036\]](#) to make that fact clear, as well as updates [\[RFC3212\]](#), [\[RFC4447\]](#), [\[RFC5918\]](#), [\[RFC6388\]](#), and [\[RFC7140\]](#) to indicate for each FEC type that has already been defined whether the label binding advertisements for the FEC are constrained by the negotiated label advertisement mode or not. Furthermore, this document specifies the label advertisement mode to be used for all currently defined FECs.

[2.](#) Label Advertisement Discipline

To remove any ambiguity and conflict regarding label advertisement discipline amongst different FEC types sharing a common LDP session, this document specifies a label advertisement disciplines for FEC types.

This document introduces following types for specifying a label advertisement discipline for a FEC type:

- DU (Downstream Unsolicited)
- DoD (Downstream On Demand)
- As negotiated (DU or DoD)
- Upstream ([\[RFC6389\]](#))
- Not Applicable
- Unknown

[2.1.](#) Update to [RFC-5036](#)

The [section 3.5.3 of \[RFC5036\]](#) is updated to add following two statements under the description of "A, Label Advertisement Discipline":

- Each document defining an LDP FEC must state the applicability of the negotiated label advertisement discipline for label binding advertisements for that FEC. If the negotiated label advertisement discipline does not apply to the FEC, the document must also explicitly state the discipline to be used for the FEC.
- This document defines the label advertisement discipline for the following FEC types:

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FEC Type	FEC Name	Label advertisement discipline
0x01	Wildcard	Not applicable
0x02	Prefix	As negotiated (DU or DoD)

2.2. Specification for LDP FECs

Following is the specification of label advertisement disciplines to be used for currently defined LDP FEC types.

FEC Type	FEC Name	Label advertisement discipline	Notes
0x01	Wildcard	Not applicable	
0x02	Prefix	As negotiated (DU or DoD)	
0x04	CR-LSP	DoD	
0x05	Typed Wildcard	Not applicable	
0x06	P2MP	DU	
0x07	MP2MP-up	DU	
0x08	MP2MP-down	DU	
0x09	HSMP-upstream	DU	
0x10	HSMP-downstream	DU, Upstream	[RFC7140] Section 4
0x80	PWid	DU	
0x81	Gen. PWid	DU	
0x82	P2MP PW Upstream	Upstream	[ID.pwe3-p2mp-pw]
0x84	P2MP PW Downstream	DU	[ID.pwe3-p2mp-pw]
0x83	Protection	DU	[ID.pwe3-endpoint-fast-protection]

This document updates the RFCs in which above FECs are defined.

3. Security Considerations

This document specification only clarifies the applicability of LDP session's label advertisement mode, and hence does not add any LDP

security mechanics and considerations to those already defined in the LDP specification [[RFC5036](#)].

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[4.](#) IANA Considerations

This document mandates the specification of a label advertisement discipline for each defined FEC type, and hence extends IANA's "Forwarding Equivalence Class (FEC) Type Name Space" registry under IANA's "Label Distribution Protocol (LDP) Parameters" as follows:

- Add a new column titled "Label Advertisement Discipline" with following possible values:
 - o DU
 - o DoD
 - o As negotiated (DU or DoD)
 - o Upstream
 - o Not applicable
 - o Unknown
- For the existing FEC types, populate this column with the values listed under [section 2.2](#).
- Keep all other columns of the registry in place and populated as currently.

For the currently assigned FEC types, the updated registry looks like:

Value	Hex	Name	Label Advertisement Discipline	Reference	Notes/Registration Date
0	0x00	Reserved			
1	0x01	Wildcard	Not applicable	[RFC5036] [thisRFC]	
2	0x02	Prefix	As negotiated (DU or DoD)	[RFC5036] [thisRFC]	
4	0x04	CR-LSP	DoD	[RFC3212] [thisRFC]	

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5	0x05	Typed Wildcard FEC Element	Not applicable	[RFC5918] [thisRFC]	
6	0x06	P2MP	DU	[RFC6388] [thisRFC]	
7	0x07	MP2MP-up	DU	[RFC6388] [thisRFC]	
8	0x08	MP2MP-down	DU	[RFC6388] [thisRFC]	
9	0x09	HSMP-upstream	DU	[RFC7140] [thisRFC]	
10	0x0A	HSMP-downstream	DU, Upstream	[RFC7140] [thisRFC]	
128	0x80	PWid FEC Element	DU	[RFC4447] [thisRFC]	
129	0x81	Generalized PWid FEC Element	DU	[RFC4447] [thisRFC]	
130	0x82	P2MP PW Upstream FEC Element	Upstream	[draft- ietf-pwe3 -p2mp-pw] [thisRFC]	
131	0x83	Protection FEC Element	DU	[draft-ietf- pwe3-end point-fast protection] [thisRFC]	
132	0x84	P2MP PW Downstream FEC Element	DU	[draft- ietf-pwe3 -p2mp-pw] [thisRFC]	

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[5.2.](#) Informative References

None.

6. Acknowledgments

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