P802.1Qca – D0.2 Editor's Notes

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D0.2 Clauses

- 1 Overview
  - 1.3 Introduction
- 2 Normative references
- 3 Definitions
- 4 Abbreviations
- 27 *Shortest Path Bridging*
- 28 *ISIS-SPB Link State Protocol*

} minimal changes

- 45 Path Control and Reservation
  - use of SPB TLVs
  - 45.1–45.5: see next slide
- Bibliography

D0.2 Clause 45

- 45.1 Explicit and constrained paths
  - 45.1.1 Constrained paths: SRLG
  - 45.1.2 Explicit paths
  - 45.1.3 Point-to-point explicit path
  - 45.1.4 Explicit tree
  - ~~45.1.5 Notification on path status~~

feedback got:
problem not aimed to be solved by Qca

- 45.2 Reservation
  - 45.2.1 Basic reservation by IS-IS: conflict resolution
  - 45.2.2 Reservation support for SRP
- 45.3 Redundancy
  - 45.3.1 Loop Free Alternates
  - 45.3.2 Maximum disjoint paths
- 45.4 Parameters for time synchronization: updates
- 45.5 Parameters for time scheduling

Use of ISIS-SPB TLVs
SPB Base VLAN Identifiers sub-TLV

- It will be made clear by the conformance statements which ISIS-SPB TLVs have to be supported for 802.1Qca

- SPB Base VLAN Identifiers sub-TLV
  - Associates an ECT Algorithm to the VLAN's Base VID
  - Dedicated ECT Algorithm for Qca: Explicit Path ECT Algorithm

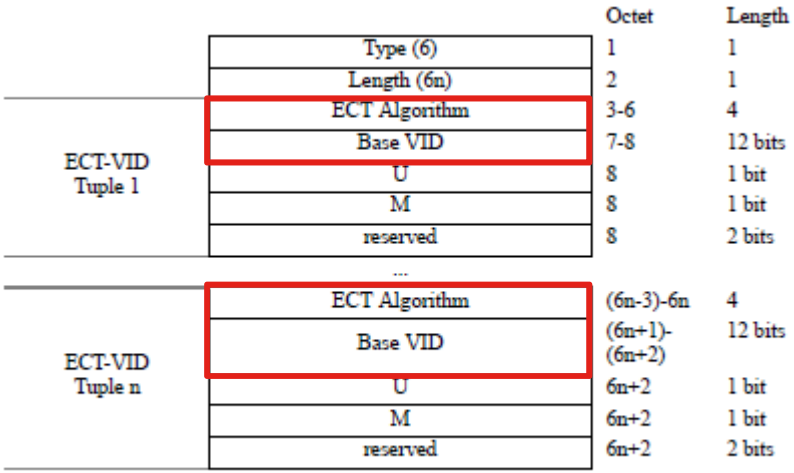


Figure 28-5—SPB Base VLAN-Identifiers sub-TLV

Use of ISIS-SPB TLVs
SPBM Service Identifier and Unicast Address sub-TLV

- SPBM Service Identifier and Unicast Address sub-TLV
  - Used for the distribution of Individual Addresses within the Domain for VLANs allocated to the SPBM MSTID

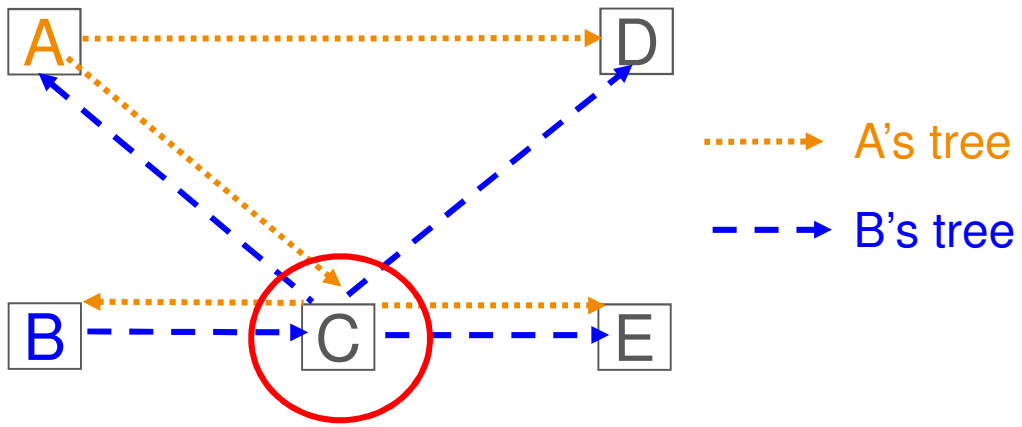
		Octet	Length
	Type (3)	1	1
	Length	2	1
	B-MAC Address	3-8	6
	reserved	9	4 bits
	Base VID	9-10	12 bits
I-SID Tuple 1	T	11	1 bit
	R	11	1 bit
	reserved	11	6 bits
	I-SID	12-14	3
	...		
I-SID Tuple n	T	(4n+7)	1 bit
	R	(4n+7)	1 bit
	reserved	(4n+7)	6 bits
	I-SID	(4n+8)-(4n+10)	3

Figure 28-11—SPBM Service Identifier and Unicast Address sub-TLV

Use of ISIS-SPB TLVs
SPBM Group MAC Addresses?

- Question: Do we want to use locally administered source specific Group MAC addresses on the explicit paths/trees as well in the non-learning VLANs?

- Background: Why do we use (S,G) multicast in SPB:
  - Different sources use different trees
  - A and B are Sources in the same Group
  - C should ONLY forward B's frames to D but NOT A's frames
  - (*,G) does not work, (S,G) is needed instead

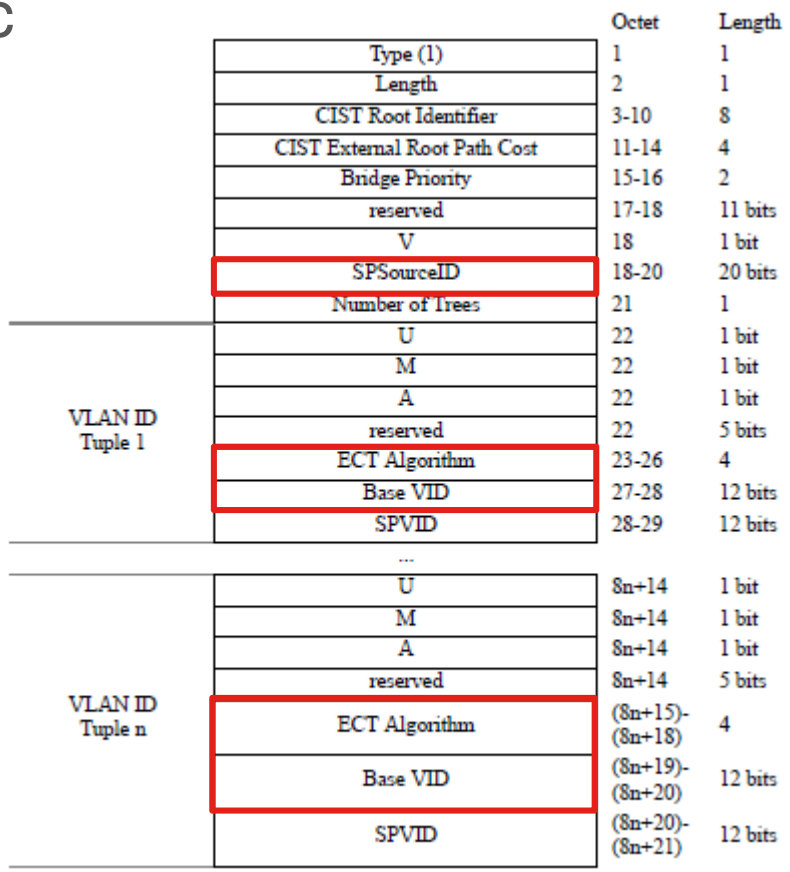


Use of ISIS-SPB TLVs
SPB Instance sub-TLV

- If Group MAC is source specific

SPSourceID	I-SID

  then SPSourceID has to be distributed in the Domain
- SPSourceID is distributed in the SPB Instance sub-TLV
- I-SID → Base VID → EP ECT Algorithm



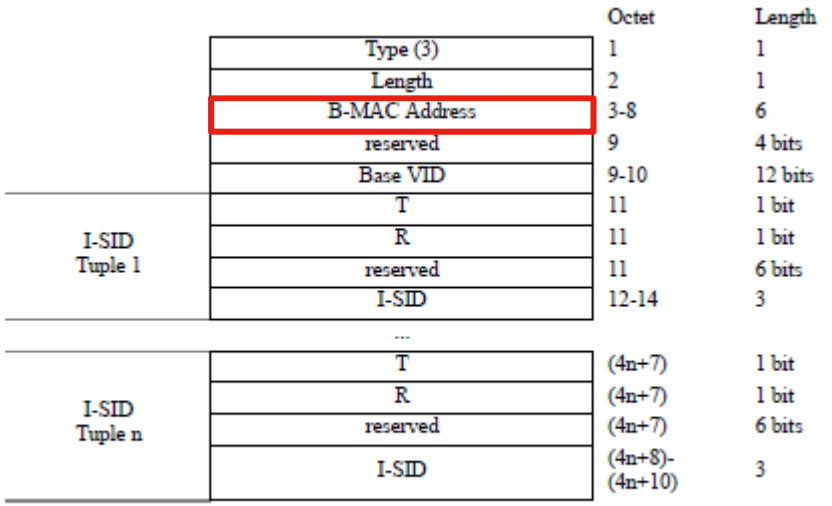
		Octet	Length
	Type (1)	1	1
	Length	2	1
	CIST Root Identifier	3-10	8
	CIST External Root Path Cost	11-14	4
	Bridge Priority	15-16	2
	reserved	17-18	11 bits
	V	18	1 bit
	SPSourceID	18-20	20 bits
	Number of Trees	21	1
VLAN ID Tuple 1	U	22	1 bit
	M	22	1 bit
	A	22	1 bit
	reserved	22	5 bits
	ECT Algorithm	23-26	4
	Base VID	27-28	12 bits
	SPVID	28-29	12 bits
	...		
VLAN ID Tuple n	U	8n+14	1 bit
	M	8n+14	1 bit
	A	8n+14	1 bit
	reserved	8n+14	5 bits
	ECT Algorithm	(8n+15)-(8n+18)	4
	Base VID	(8n+19)-(8n+20)	12 bits
	SPVID	(8n+20)-(8n+21)	12 bits

Figure 28-6—SPB Instance sub-TLV

Use of ISIS-SPB TLVs
SPBM Service Identifier and Unicast Address sub-TLV for multicast

- If a single shared tree is used for a Group, then (*,G) can be applied
- Group MAC could be then distributed by the SPBM Service Identifier and Unicast Address sub-TLV

- Should we allow it?
- Should we rename the sub-TLV to *SPBM Service Identifier and MAC Address sub-TLV*?

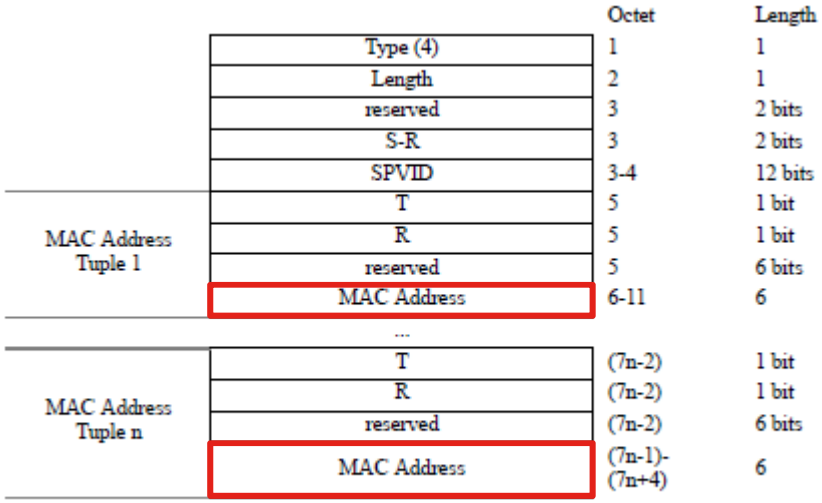


		Octet	Length
	Type (3)	1	1
	Length	2	1
	B-MAC Address	3-8	6
	reserved	9	4 bits
	Base VID	9-10	12 bits
I-SID Tuple 1	T	11	1 bit
	R	11	1 bit
	reserved	11	6 bits
	I-SID	12-14	3
	...		
I-SID Tuple n	T	(4n+7)	1 bit
	R	(4n+7)	1 bit
	reserved	(4n+7)	6 bits
	I-SID	(4n+8)-(4n+10)	3

Figure 28-11—SPBM Service Identifier and Unicast Address sub-TLV

Use of ISIS-SPB TLVs
SPBV MAC Address sub-TLV

- SPBV MAC Address sub-TLV
  - Can be used for both Individual and Group MAC Address distribution for VLANs allocated to the SPBV MSTID

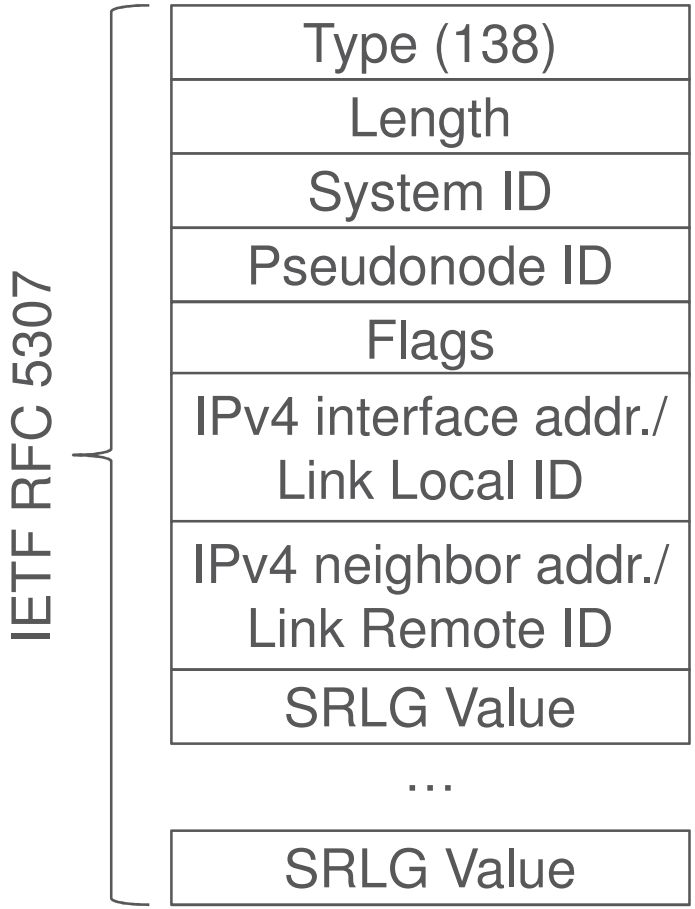


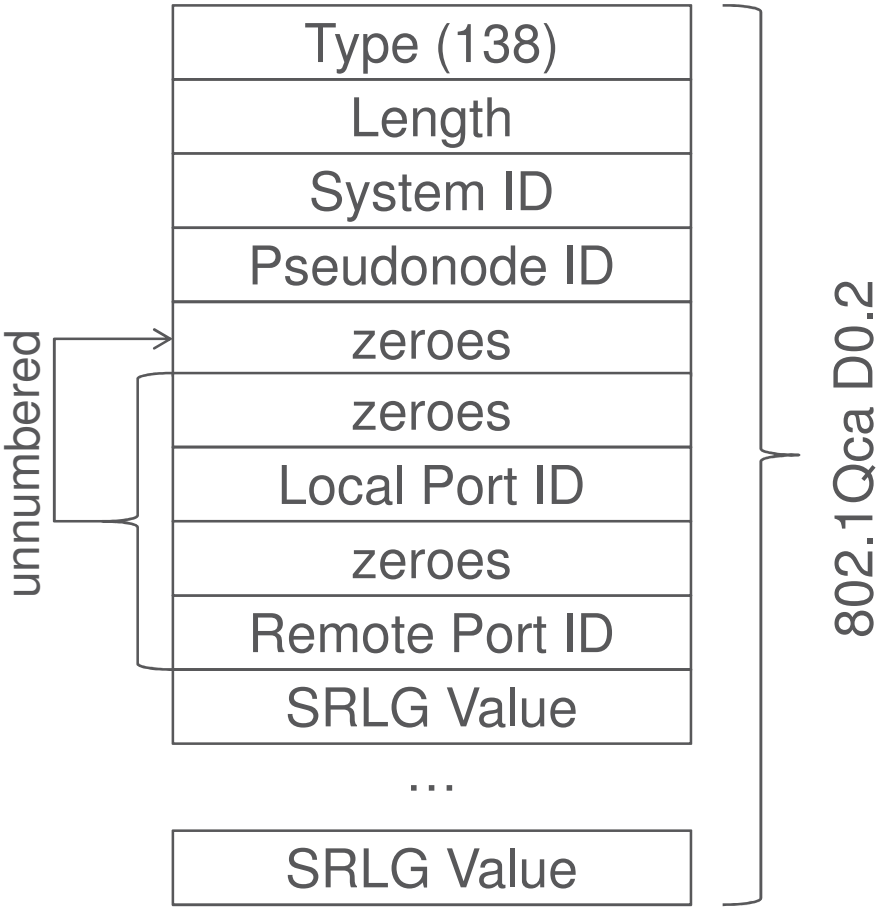
		Octet	Length
	Type (4)	1	1
	Length	2	1
	reserved	3	2 bits
	S-R	3	2 bits
	SPVID	3-4	12 bits
MAC Address Tuple 1	T	5	1 bit
	R	5	1 bit
	reserved	5	6 bits
	MAC Address	6-11	6
	...		
MAC Address Tuple n	T	(7n-2)	1 bit
	R	(7n-2)	1 bit
	reserved	(7n-2)	6 bits
	MAC Address	(7n-1)-(7n+4)	6

Figure 28-10—SPBV MAC Address sub-TLV

45.1.1 Constrained Paths Shared Link Risk Group (SRLG)

- Do we want to use SRLG?





45.2.1 Basic reservation by IS-IS

- New: Conflict resolution
  - Similar to SPVID allocation conflict resolution, see subclause 27.10 and page 6 of http://www.ieee802.org/1/files/public/docs2009/aq-farkas-allocation-0518-v02.pdf
- Existing reservations are not touched
- Conflict should not occur in case of a single PCE
- But we can have a safeguard: we can e.g. tie-break on
  - the least number of hops or nodes
  - the lowest Path ID
  - the smallest Reservation Value
  - the numerically least System ID of the originator of the LSP
  - the numerically least LSP sequence number
- Everybody gets every LSP
  - Winner is known
  - Loser's reservation is rolled back

45.2.1 IS-IS Support for SRP

- **How should SRP and IS-IS interwork?**
- See discussion in http://www.ieee802.org/1/files/public/docs2013/ca-farkas-SRP-ISIS-interworking-0713-v01.pdf

- Initial sub-TLV for now

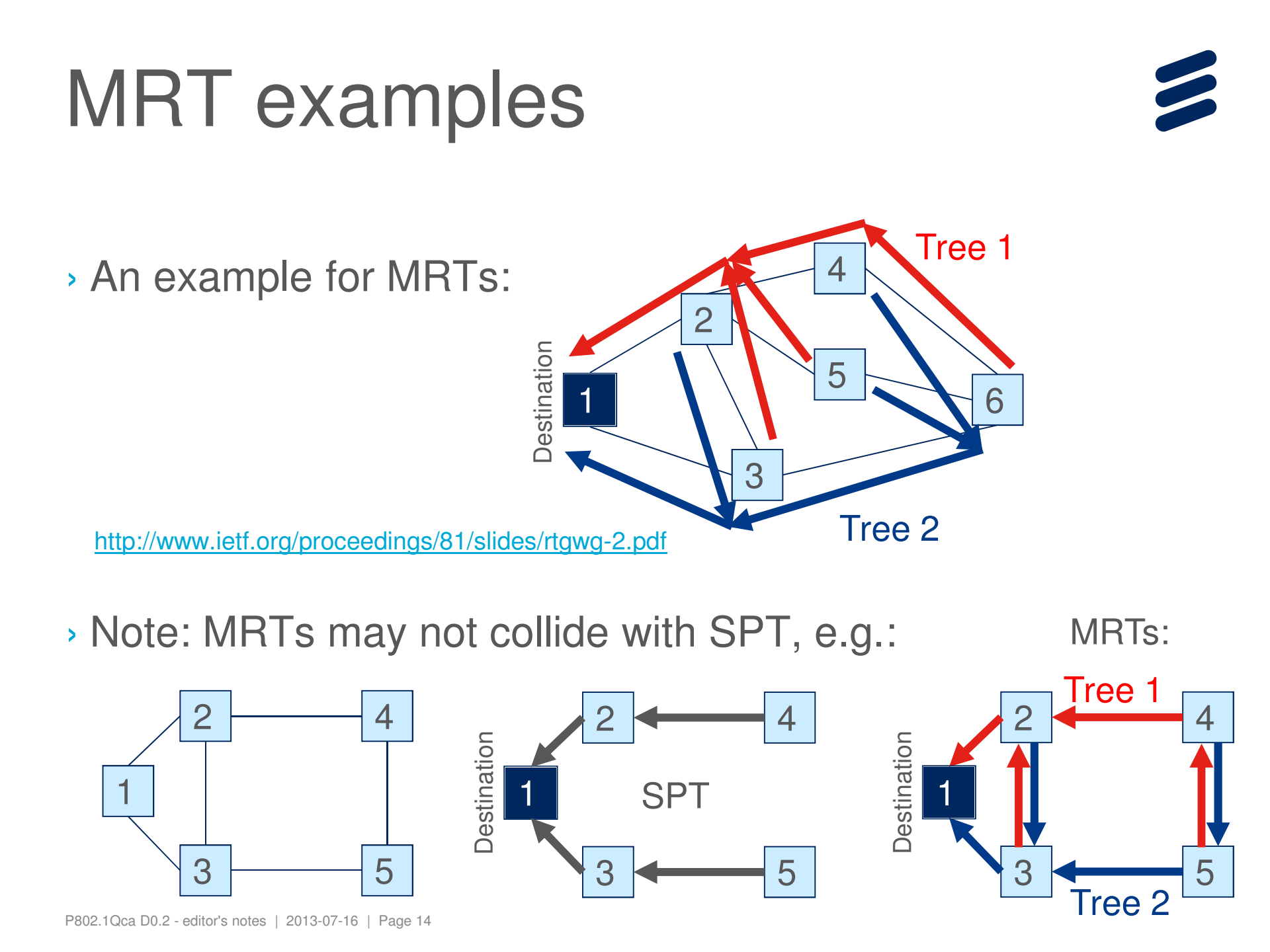
	Octet	Length
Type (???)	1	1
Length (16)	2	1
Stream DA	3-8	6
Stream ID	9-14	6
TSpec	14-17	4
Priority	18	4 bits
Ranking	18	4 bits

Figure 45-9—Stream sub-TLV

45.3.2 Disjoint Paths

- Explicit Paths are not updated
  - PCE can compute the wanted paths, e.g. maximally disjoint paths
  - IS-IS installs them and does not touch them any more
  - (subclause 45.1)
- **Questions**:
- Do we want to leverage IS-IS automation features?
  - Define standard algorithm for disjoint path?
  - Allow careful update?
- Maximally redundant trees?
  - Do we want to go for Maximal Redundant Trees (MRT) as well or just point-to-to-point paths?
    - MRT algorithm: https://datatracker.ietf.org/doc/draft-ietf-rtgwg-mrt-frr-architecture/
    - see next slide for MRT examples

MRT examples



- An example for MRTs:

http://www.ietf.org/proceedings/81/slides/rtgwg-2.pdf

- Note: MRTs may not collide with SPT, e.g.:

MRTs:

45.4 Time Synchronization Parameters

- Updated based on the input got from Geoffrey Garner, Thanks!

- Each clock sends

	Octet
Type (???)	1
Length ()	2
priority1	3
clockClass	
clockAccuracy	
offsetScaledLogVariance	
priority2	
clockIdentity	

Figure 45-10—Clock Attributes sub-TLV

- Grandmasters send

	Octet
Type (???)	1
Length ()	2
grandmasterIdentity	
timeSource	
currentUtcOffset	
reserved	
leap59	
leap61	
currentUtcOffsetValid	
ptpTimescale	
timeTraceable	
frequencyTraceable	

Figure 45-11—Grandmaster sub-TLV