Super-PON PCS Proposal

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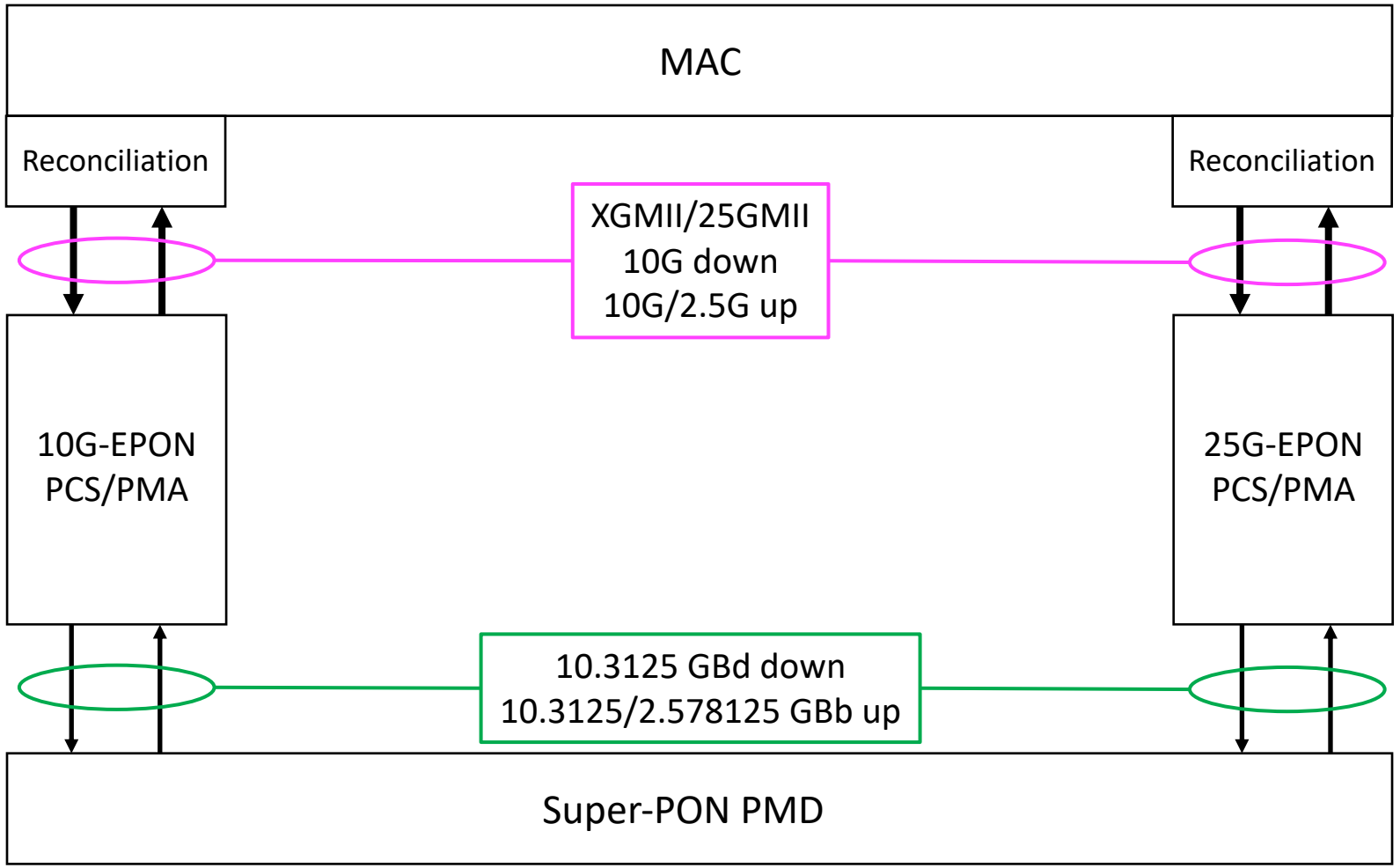
Claudio DeSanti (Google)

Super-PON PCS Options

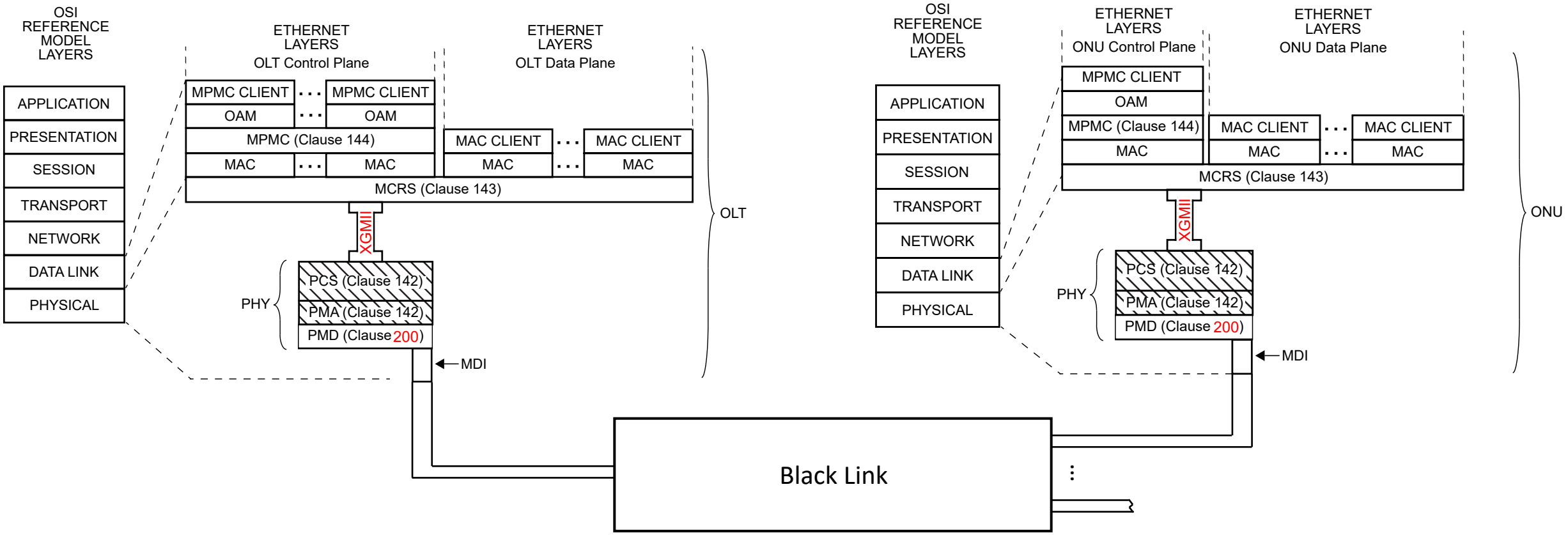


Proposal

- Leverage the 25G-EPON PCS for Super-PON
  - For both 10/10G symmetric and 10/2.5G asymmetric speeds
  - The normative PCS
- Provide an informative annex describing how 10G-EPON ONUs and OLTs could be enhanced to support tunable symmetric Super-PON PMDs

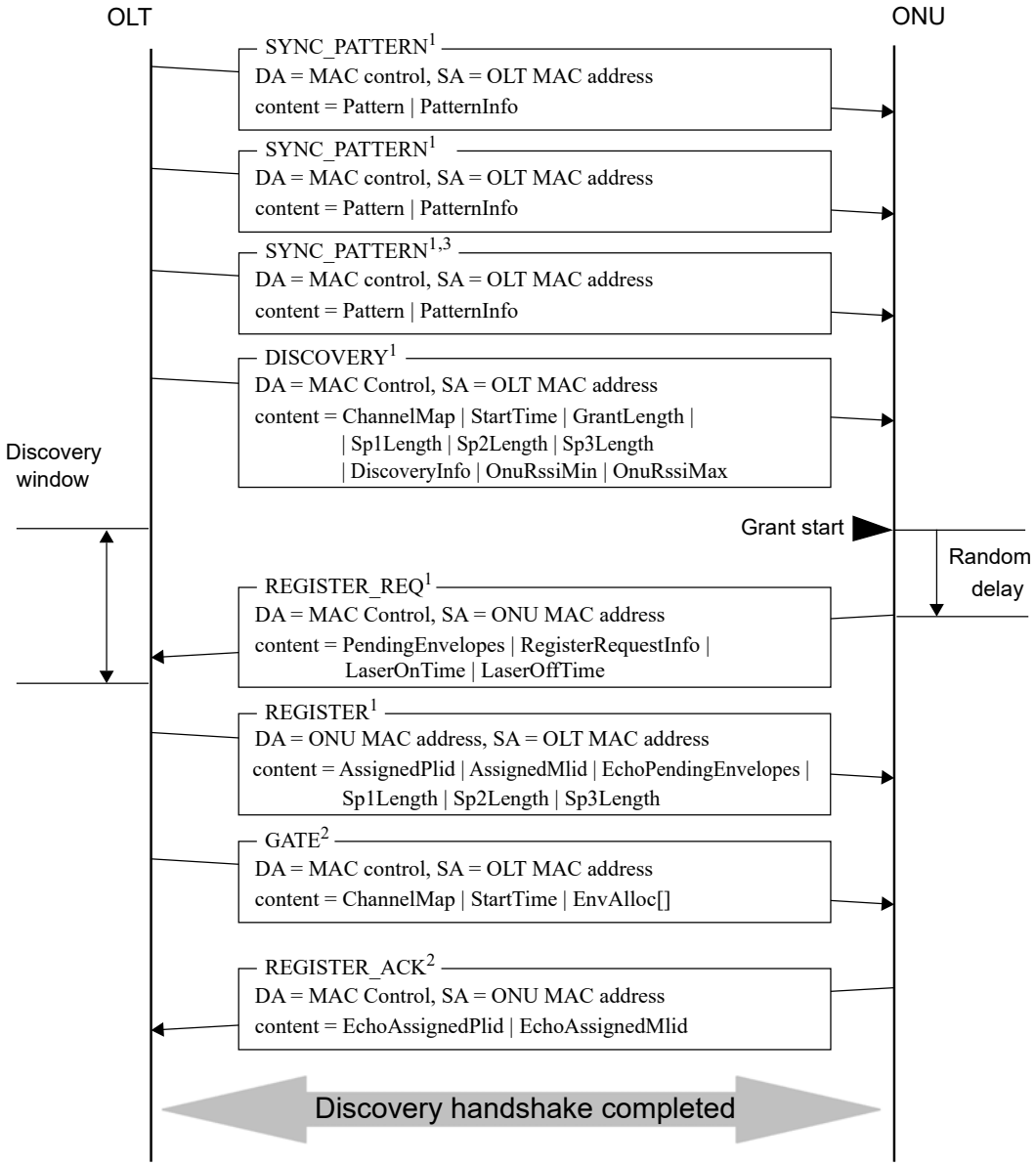
Leverage 25G-EPON PCS for Super-PON

Super-PON PCS from 25G-EPON



25G-EPON Discovery

- Leverage the DISCOVERY MPCPDU



[1] Messages sent on discovery PLID (DISC_PLID)
[2] Messages sent on unicast PLID
[3] Present only when *Count* in SYNC_PATTERN MPCPDU is equal to 3

Figure 144–19—Discovery handshake message exchange

DISCOVERY MPCPDU

- Leverage the DiscoveryInfo field

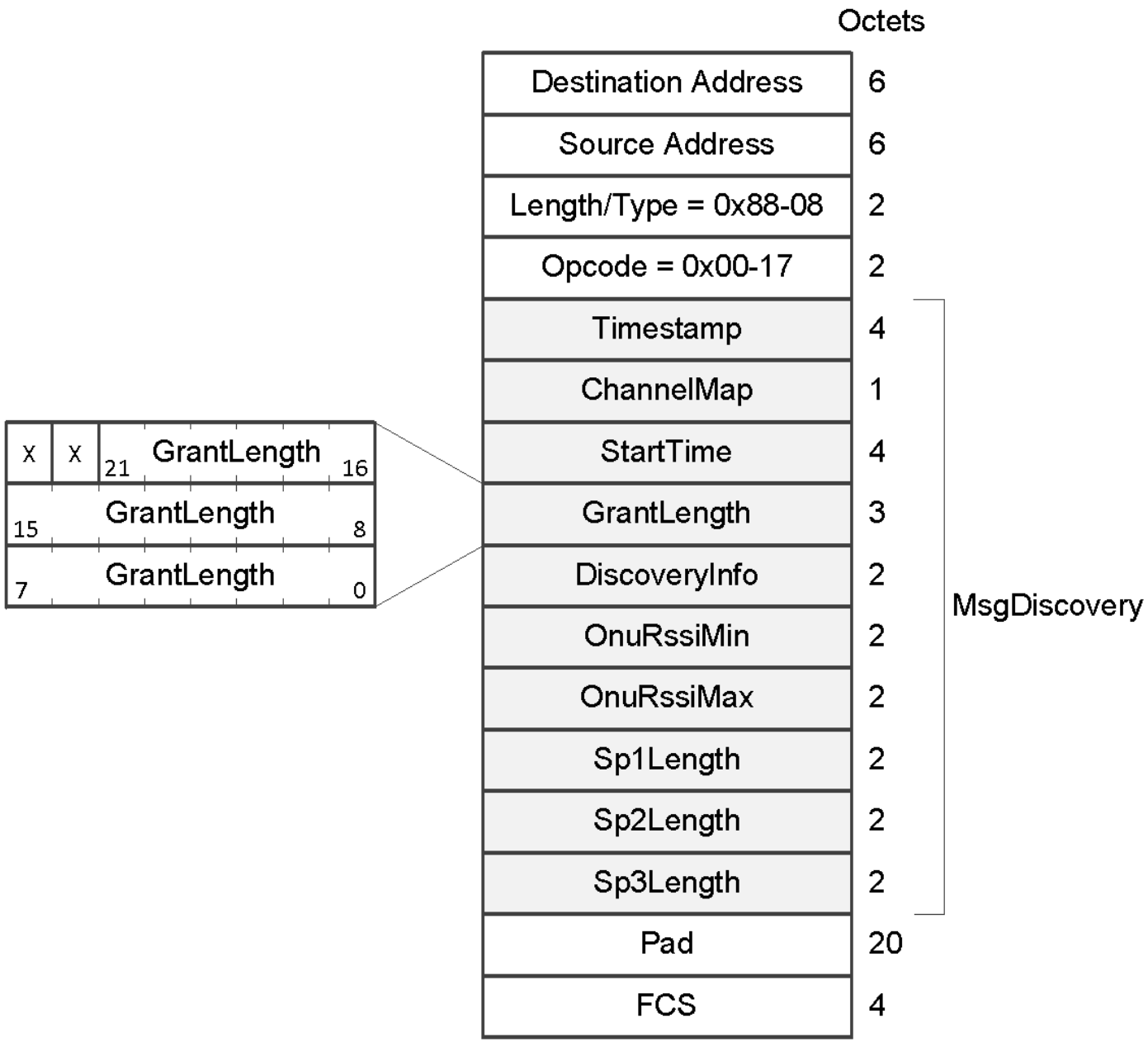


Figure 144–17—DISCOVERY MPCPDU

DiscoveryInfo Field

Table 144–7—*DiscoveryInfo* field

Bit	Flag field	Values
0	Reserved	Ignored on Reception
1	OLT is 10G upstream capable	0 – OLT does not support 10 Gb/s reception 1 – OLT supports 10 Gb/s reception
2	OLT is 25G upstream capable	0 – OLT does not support 25 Gb/s reception 1 – OLT supports 25 Gb/s reception
3-4	Reserved	Ignored on Reception
5	OLT is opening 10G discovery window	0 – OLT cannot receive 10 Gb/s data in this window 1 – OLT can receive 10 Gb/s data in this window
6	OLT is opening 25G discovery window	0 – OLT cannot receive 25 Gb/s data in this window 1 – OLT can receive 25 Gb/s data in this window
7-13	Reserved	Ignored on Reception
14	Coexistence class G	0 – ONUs supporting PMDs coexistence class G are not allowed to register 1 – ONUs supporting PMDs coexistence class G are allowed to register
15	Coexistence class X	0 – ONUs supporting PMDs coexistence class X are not allowed to register 1 – ONUs supporting PMDs coexistence class X are allowed to register

Updated DiscoveryInfo Field

Updated DiscoveryInfo field

Bit	Flag field	Values	
0	Reserved	Ignored on reception	
1	OLT is 10G upstream capable	0 – OLT does not support 10 Gb/s reception 1 – OLT supports 10 Gb/s reception	Super-PON Parameters
2	OLT is 25G upstream capable	0 – OLT does not support 25 Gb/s reception 1 – OLT supports 25 Gb/s reception	
3	OLT is 2.5G upstream capable	0 – OLT does not support 2.5 Gb/s reception 1 – OLT supports 2.5 Gb/s reception	
4	Reserved	Ignored on reception	
5	OLT is opening 10G discovery window	0 – OLT cannot receive 10 Gb/s data in this window 1 – OLT can receive 10 Gb/s data in this window	Super-PON Parameters
6	OLT is opening 25G discovery window	0 – OLT cannot receive 25 Gb/s data in this window 1 – OLT can receive 25 Gb/s data in this window	
7	OLT is opening 2.5G discovery window	0 – OLT cannot receive 2.5 Gb/s data in this window 1 – OLT can receive 2.5 Gb/s data in this window	
8-9	Reserved	Ignored on reception	
10-13	Channel information	Encodes the channel number the OLT is operating on	Super-PON Parameters
14	Coexistence class G	0 – ONUs supporting PMDs coexistence class G are not allowed to register 1 – ONUs supporting PMDs coexistence class G are allowed to register	
15	Coexistence class X	0 – ONUs supporting PMDs coexistence class X are not allowed to register 1 – ONUs supporting PMDs coexistence class X are allowed to register	

25G-EPON Parameters (bits 1–3)

25G-EPON Parameters (bits 5–7)

REGISTER_REQ MPCPDU

Table 144–4—*RegisterRequestInfo* field

Bit	Flag field	Values
0	Reserved	Ignored on Reception
1	ONU is 10G upstream capable	0 – ONU transmitter is not capable of 10 Gb/s 1 – ONU transmitter is capable of 10 Gb/s
2	ONU is 25G upstream capable	0 – ONU transmitter is not capable of 25 Gb/s 1 – ONU transmitter is capable of 25 Gb/s
3-4	Reserved	Ignored on Reception
5	10G registration attempt	0 - 10 Gb/s registration is not attempted 1 - 10 Gb/s registration is attempted
6	25G registration attempt	0 - 25 Gb/s registration is not attempted 1 - 25 Gb/s registration is attempted
7-15	Reserved	Ignored on Reception

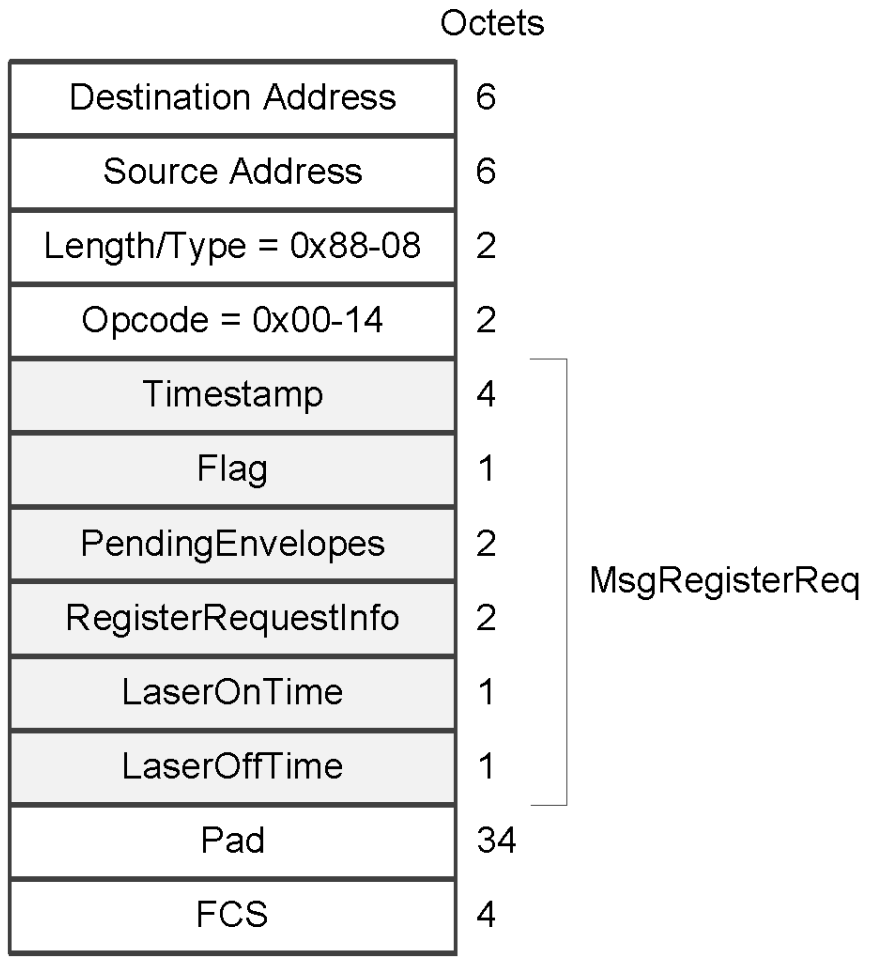


Figure 144–14—REGISTER_REQ MPCPDU

Updated REGISTER_REQ RegisterRequestInfo Field

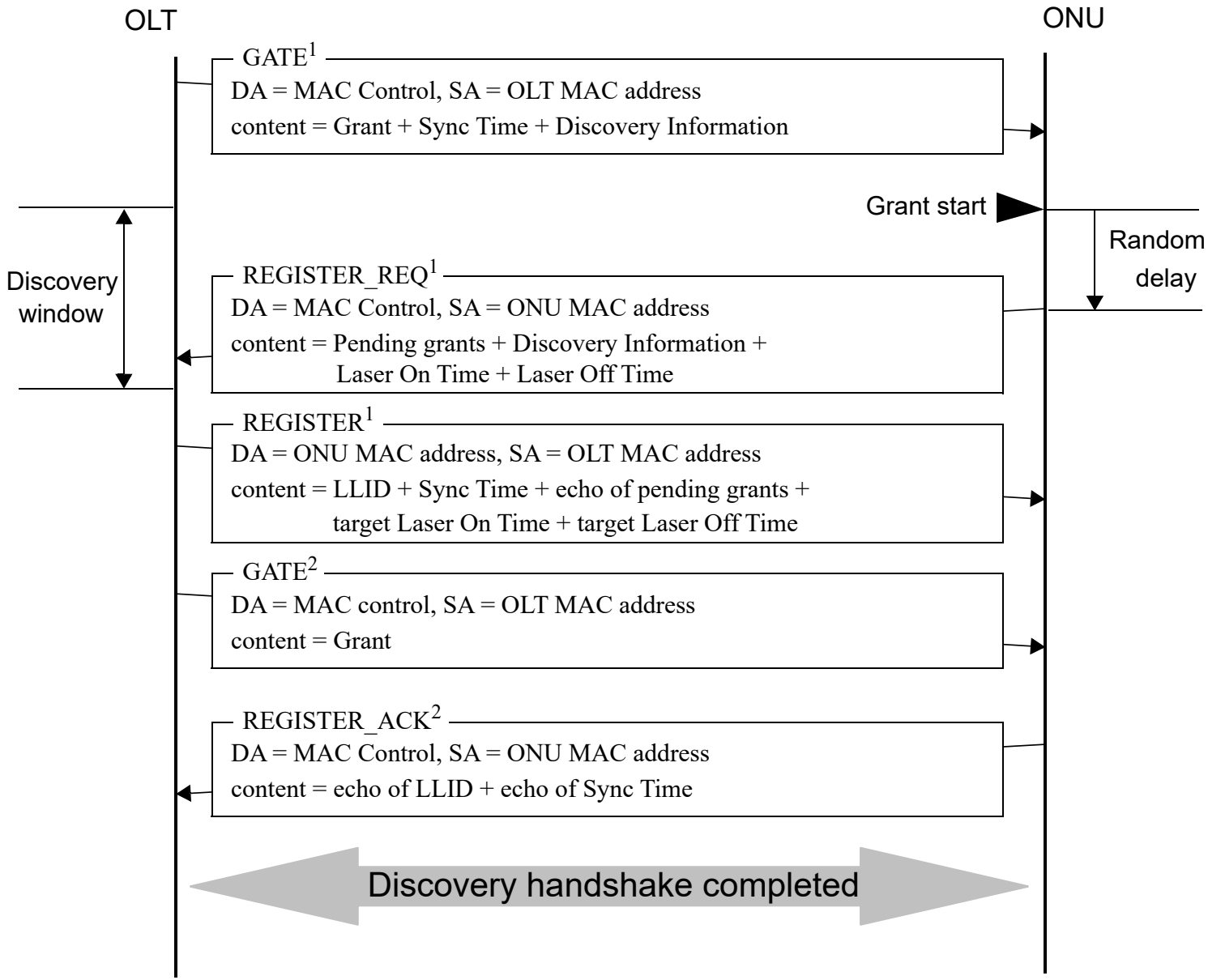
Updated REGISTER_REQ MPCPDU discovery information fields

	Bit	Flag field	Values	
	0	Reserved	Ignored on reception	
25G-EPON Parameters	1	ONU is 10G upstream capable	0 – ONU transmitter is not capable of 10 Gb/s 1 – ONU transmitter is capable of 10 Gb/s	Super-PON Parameters
25G-EPON Parameters	2	ONU is 25G upstream capable	0 – ONU transmitter is not capable of 25 Gb/s 1 – ONU transmitter is capable of 25 Gb/s	Super-PON Parameters
	3	ONU is 2.5G upstream capable	0 – ONU transmitter is not capable of 2.5 Gb/s 1 – ONU transmitter is capable of 2.5 Gb/s	Super-PON Parameters
	4	Reserved	Ignored on reception	
25G-EPON Parameters	5	10G registration attempt	0 – ONU transmitter is not capable of 10 Gb/s 1 – ONU transmitter is capable of 10 Gb/s	Super-PON Parameters
25G-EPON Parameters	6	25G registration attempt	0 – ONU transmitter is not capable of 25 Gb/s 1 – ONU transmitter is capable of 25 Gb/s	Super-PON Parameters
	7	2.5G registration attempt	0 – ONU transmitter is not capable of 2.5 Gb/s 1 – ONU transmitter is capable of 2.5 Gb/s	Super-PON Parameters
	8-15	Reserved	Ignored on reception	

Use Super-PON PMDs with 10G-EPON ONUs and OLTs

Informative: 10G-EPON Discovery

- Leverage the discovery GATE MPCPDU



[1] Messages sent on a broadcast channel
[2] Messages sent on unicast channels

Figure 77–15—Discovery handshake message exchange

GATE MPCPDU

- Leverage the Discovery Information field

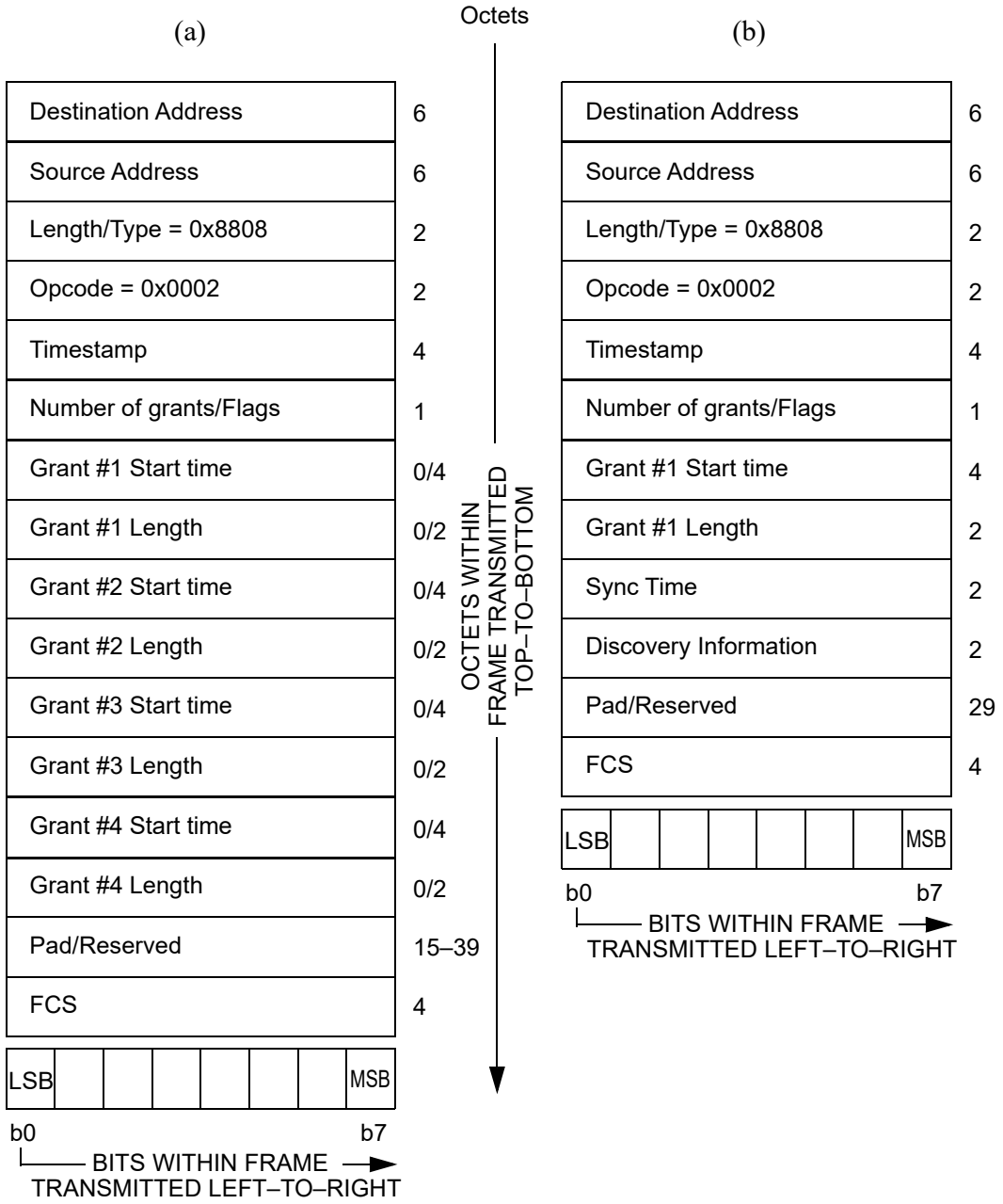


Figure 77–32—GATE MPCPDU: (a) normal GATE MPCPDU, (b) discovery GATE MPCPDU

GATE MPCPDU Discovery Information Field

Table 77–3—GATE MPCPDU discovery information fields

Bit	Flag field	Values
0	OLT is 1G upstream capable	0 – OLT does not support 1 Gb/s reception 1 – OLT supports 1 Gb/s reception
1	OLT is 10G upstream capable	0 – OLT does not support 10 Gb/s reception 1 – OLT supports 10 Gb/s reception
2–3	Reserved	Ignored on reception
4	OLT is opening 1G discovery window	0 – OLT cannot receive 1 Gb/s data in this window 1 – OLT can receive 1 Gb/s data in this window
5	OLT is opening 10G discovery window	0 – OLT cannot receive 10 Gb/s data in this window 1 – OLT can receive 10 Gb/s data in this window
6–15	Reserved	Ignored on reception

Updated GATE MPCPDU Discovery Information

Updated GATE MPCPDU discovery information fields

	Bit	Flag field	Values
10G-EPON Parameters	0	OLT is 1G upstream capable	0 – OLT does not support 1 Gb/s reception 1 – OLT supports 1 Gb/s reception
10G-EPON Parameters	1	OLT is 10G upstream capable	0 – OLT does not support 10 Gb/s reception 1 – OLT supports 10 Gb/s reception
	2-3	Reserved	Ignored on reception
	4	OLT is opening 1G discovery window	0 – OLT cannot receive 1 Gb/s data in this window 1 – OLT can receive 1 Gb/s data in this window
10G-EPON Parameters	5	OLT is opening 10G discovery window	0 – OLT cannot receive 10 Gb/s data in this window 1 – OLT can receive 10 Gb/s data in this window
10G-EPON Parameters	6-11	Reserved	Ignored on reception
10G-EPON Parameters	12-15	Channel information	Encodes the channel number the OLT is operating on

Super-PON Parameters

Comments?

Thank you!