

# Channel management

Gaobo (Huawei)  
Duane Remein (Huawei)  
Frank Effenberger (Huawei)

# Background

100G-EPON

- ❑ Discovery Information Fields of REGISTER\_REQ MPCPDU (Table 144-2) only has capability of 1G/10G/25G. We need more information for different scenarios.
- ❑ ONU with multiple channels need turn off any channels dynamically for saving power, traffic balance or other specific purpose.

# Channel capability report (1/2)

- Reserved bits of REGISTER\_REQ can be used for adding more information of channel capability

Bit	Discovery information	Values
0	ONU is 1G upstream capable	0 – ONU transmitter is not capable of 1 Gb/s 1 – ONU transmitter is capable of 1 Gb/s
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	Reserved	Ignored on Reception
4	1G registration attempt	0 – 1 Gb/s registration is not attempted 1 – 1 Gb/s registration is attempted
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	Reserved	
8-15	Channel capability	Bitmap of each DS and US channel

# Channel capability report

(2/2)

- Discovery information fields can use for various scenarios flexibly

Bit	Channel capability	Values
8	Downstream channel 0	0 – not support 1 – support
9	Upstream channel 0	0 – not support 1 – support
10	Downstream channel 1	0 – not support 1 – support
11	Upstream channel 1	0 – not support 1 – support
12	Downstream channel 2	0 – not support 1 – support
13	Upstream channel 2	0 – not support 1 – support
14	Downstream channel 3	0 – not support 1 – support
15	Upstream channel 3	0 – not support 1 – support

ONU capability	Values of discovery information
25G/10G	00000011-00100010 ONU is 10G upstream capable = 1 10G registration attempt = 1 Downstream channel 0 = 1 Upstream channel 0 = 1
25G/25G	00000011-01000100 ONU is 25G upstream capable = 1 25G registration attempt = 1 Downstream channel 0 = 1 Upstream channel 0 = 1
2x25G/2x25G	00001111-01000100 ONU is 25G upstream capable = 1 25G registration attempt = 1 Downstream channel 0-1 = 1 Upstream channel 0-1 = 1
4x25G/4x25G	11111111-01000100 ONU is 25G upstream capable = 1 25G registration attempt = 1 Downstream channel 0-3 = 1 Upstream channel 0-3 = 1

# Channel management

- ❑ Need to define MPCP messages to turn the channel on/off
- ❑ Query channel status is a necessary operation

Channel_Req	Octets
DA	6
SA	6
L/T=0x8808	2
Opcode=0x0018	2
Timestemp	4
Flags	1
Bitmap of channels	1
Pad	38
FCS	4

Flags	
Value	Indication
0	Query
1	Turn channel on/off
2-255	Reserved

Bitmap of channels		
Bit	Field	Values
0	DS0	0 – turn off, 1 – turn on
1	US0	0 – turn off, 1 – turn on
2	DS1	0 – turn off, 1 – turn on
3	US1	0 – turn off, 1 – turn on
4	DS2	0 – turn off, 1 – turn on
5	US2	0 – turn off, 1 – turn on
6	DS3	0 – turn off, 1 – turn on
7	US3	0 – turn off, 1 – turn on

Channel_Ack	Octets
DA	6
SA	6
L/T=0x8808	2
Opcode=0x0019	2
Timestemp	4
Flags	1
Channels status	1
Pad	38
FCS	4

Flags		
Bit	Field	Values
0	DS0	0 – Nack, 1 – Ack
1	US0	0 – Nack, 1 – Ack
2	DS1	0 – Nack, 1 – Ack
3	US1	0 – Nack, 1 – Ack
4	DS2	0 – Nack, 1 – Ack
5	US2	0 – Nack, 1 – Ack
6	DS3	0 – Nack, 1 – Ack
7	US3	0 – Nack, 1 – Ack

Channels status		
Bit	Field	Values
0	DS0	0 – offline, 1 – power online
1	US0	0 – offline, 1 – power online
2	DS1	0 – offline, 1 – power online
3	US1	0 – offline, 1 – power online
4	DS2	0 – offline, 1 – power online
5	US2	0 – offline, 1 – power online
6	DS3	0 – offline, 1 – power online
7	US3	0 – offline, 1 – power online

- ❑ Discovery Information Fields of REGISTER\_REQ MPCPDU should be expanded to support more scenarios
- ❑ A new MPCP message should be defined to turn the channel on/off

# Thank You