



128GFC SPEED NEGOTIATION

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Speed Negotiation for 128GFC

- Speed negotiation is designed for 4 speeds and Brocade wants to support 4/8/16/32GFC as those 4 speeds
- The speed negotiation only needs to be carried out on lane 0 of the 4 lanes of 128GFC
- 128GFC-capable ports will need to be configured as an 128GFC port or as a breakout port into 4 individual lanes
- During Speed Negotiation, training frames will be sent for 32GFC, while 16GFC and lower speeds will send primitives as the standard defines

Speed Negotiation Continued

- A 4-lane port can support individual lanes of 16GFC, 32GFC or 4-lane 128GFC
 - Different Speed Negotiation signaling is required from 4X32GFC and 128GFC
- QSFPs don't have "Rate Select" pins like SFP+, so QSFP modules can't change settings quickly during speed negotiation
- Without Rate Select, the QSFP will not be able to support 8GFC



Speed Negotiation on Lane 0

- Ethernet does speed negotiation over Lane 0 in multilane speeds and Fibre Channel can use the same technique

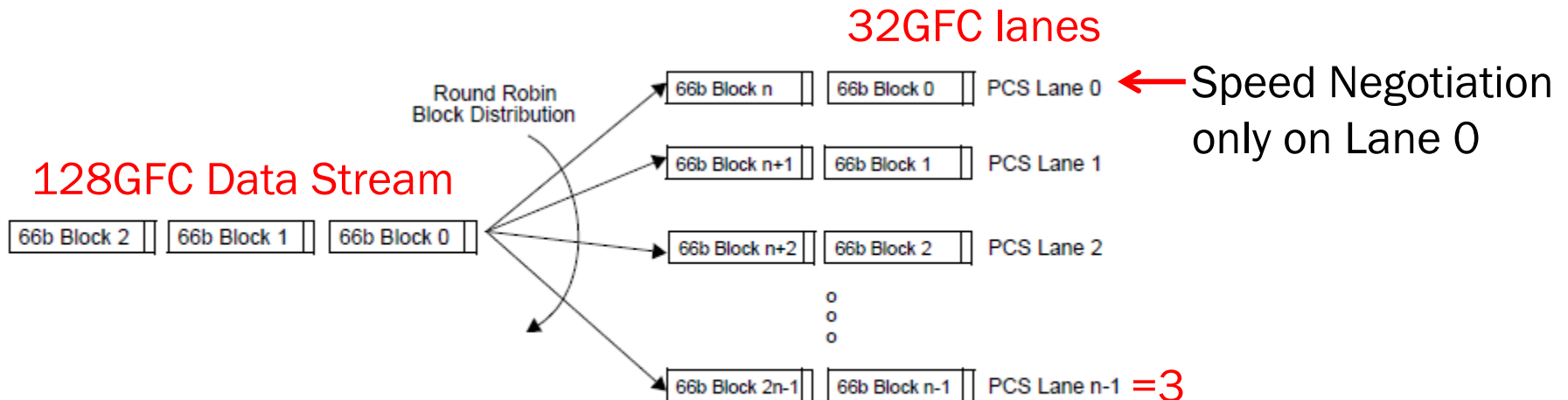


Figure 82-6—PCS Block distribution

Transmitter Training Frames for 32GFC

- Optical ports up to 16GFC didn't use transmitter training
- Can we use transmitter training over optical ports at 32GFC?
- To enable 128GFC, 32GFC should send transmitter training frames during speed negotiation
- New signaling will be needed to distinguish between 16GFC, 32GFC and higher speeds

Training Frame Changes

Table 16 - Training Frame Control field

Bits	Field name	Content
15-14		Reserved
13	Preset	Set to one: the transmitter should set all coefficients to preset values. Set to zero: no transmitter action advised.
12	Initialize	Set to one: The Transmitter should set all coefficients to initialize values. Set to zero: no transmitter action.
11	FECReq	Set to one: the FC_Port is requesting the use of Forward Error Correction (FEC) (see 5.3) in association with 64B/66B. Set to zero: the FC_Port is directing not to use Forward Error Correction (FEC) in association with 64B/66B.
10-6		Reserved
5-4	C1Upd	Set to 11b: reserved. Set to 10b: transmitter should decrement coefficient 1 one step. Set to 01b: transmitter should increment coefficient 1 one step. Set to 00b: transmitter should not change coefficient 1.
3-2	C0Upd	Set to 11b: reserved. Set to 10b: transmitter should decrement coefficient 0 one step. Set to 01b: transmitter should increment coefficient 0 one step. Set to 00b: transmitter should not change coefficient 0.
1-0	C-1Upd	Set to 11b: reserved. Set to 10b: transmitter should decrement coefficient -1 one step. Set to 01b: transmitter should increment coefficient -1 one step. Set to 00b: transmitter should not change coefficient -1.



Use bit 14 to say 4-lane striping is available. This will work for future speeds as well.

Text:

Set to one: 4-lane striping supported

Set to zero: 4-lane striping not supported

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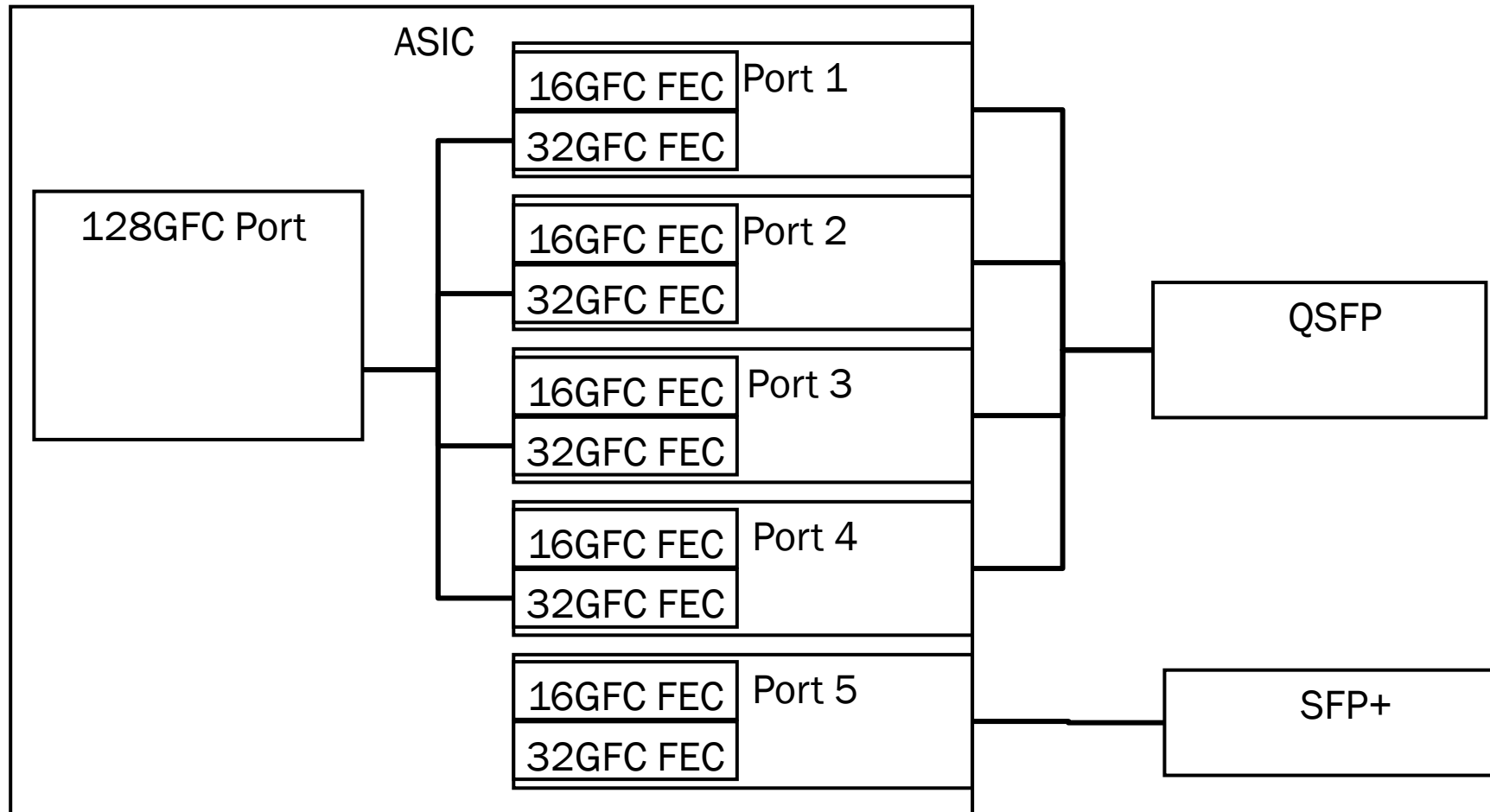
Use bit 10 and 9 to specify the maximum speed a single lane of the port can operate at:

- 00 - 16GFC
- 01 - 32GFC
- 10 - 64GFC
- 11 - 128GFC



128GFC and FEC

128GFC will need FEC at the 32GFC level



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THANK YOU

