Auto-negotiation New Proposal.

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Auto-negotiation New proposal.

- Use two entries for Technology Ability field. 25GBASE-CR and 25GBASE-CR-S (The same bits can also be used for 25GBASE-KR, but don't have to be).
- Add an extra bit to be "Request RS-FEC".
- Add one extra bit for "Request 25G BASE-R FEC".

- **Priority rules.**
  - Technology Ability field 25GBASE-CR has priority over 25GBASE-CR-S
- **FEC Rules**
  - If both Parties have "25GBASE-CR" technology ability (25GBASE-CR is HCD) and either has "Request RS FEC" then RS FEC.
  - Else if Both parties have either "25Gbase-CR" or "25GBASE -CR-S" (25GBASE-CR-S or 25GBASE-CR is HCD) and either assert "Request RS-FEC" or "25G BASE-R FEC" then BASE-R FEC.
  - Else No FEC

New Proposal in Table Format

Auto-negotiation table

HCD		OR of RS-FEC REQ	OR of 25G BASE-R REQ	Usage
CR	CR-S			
	Y	0	0	noFEC
	Y	X	1	BASE-R
	Y	1	X	BASE-R
Y		0	0	noFEC
Y		0	1	BASE-R
Y		1	X	RSFEC

HCD is Highest Common Demoninator with CR being higher priority than CR-S
OR is the OR function of the appropriate FEC Request from the two ends.
X is don’t care.

Alternative wording of FEC Rules for new proposal

Auto-negotiation New Proposal alternative wording.

- **Alternative writing of Rules**
  - If both Parties have “25GBASE-CR” technology ability (25GBASE-CR is HCD) and either has “Request RS FEC” then RS FEC.
  - If Both parties have either “25Gbase-CR” or “25GBASE -CR-S” (25GBASE-CR-S or 25GBASE-CR is HCD) and neither assert “Request RS-FEC” or “25G BASE-R FEC” then No FEC.
  - Else if either 25GBASE-CR-S or 25GBASE-CR is HCD use 25G Base R FEC.

Backup dudek_3by_01a_0315 option

Auto-negotiation Proposal in dudek_3by_01a_0315.

- Use two entries for Technology Ability field. 25GBASE-CR and 25GBASE-CR-S.
- Add an extra bit to be “25G Maximum FEC Requested”. This would be default set.
- Add one extra bit for “25G BASE-R FEC requested”.

- **Rules (If either 25GBASE-CR or 25GBASE-CR-S is HCD)**
  - If “25G Maximum FEC requested” is asserted by either partner
    - If both partners advertise “25GBASE-CR” then RS FEC Else BASE-R FEC.
  - If “25G Maximum FEC requested” is not asserted by either partner
    - If either partner asserts 25G BASE-R FEC then 25G BASE-R FEC is used. Else No FEC

Setting of Auto-Negotiation bits (option 1)

- **Based on Port type and preference for Low latency and power versus most plug and play and lowest Frame Loss Ratio the bits are set as below.**

Initial setting.					
Local information		Bits advertised			
Type of Port	Highest priority latency (set by management)	Technology Ability 25GBASE-CR-S	Technology Ability 25GBASE-CR	25G Maximum FEC requested	Base -R FEC requested
25GBASE-CR	N	Y	Y	Y	N
	Y	Y	Y	N	N
25GBASE-CR-S	N	Y	N	Y	N
	Y	Y	N	N	N

Priority Resolution

Priority Resolution.								
Near end advertisement				Far end information received				
Technology Ability 25GBASE-CR-S	Technology Ability 25GBASE-CR	25G Maximum FEC requested	Base -R FEC requested	Technology Ability 25GBASE-CR-S	Technology Ability 25GBASE-CR	25G Maximum FEC requested	Base -R FEC requested	FEC to use
Y	Y	X	X	Y	Y	Y	X	RS
Y	Y	Y	X	Y	Y	X	X	RS
Y	X	X	X	Y	N	Y	X	BASE-R
Y	X	Y	X	Y	N	X	X	BASE-R
Y	N	X	X	Y	X	Y	X	BASE-R
Y	N	Y	X	Y	X	X	X	BASE-R
Y	X	N	Y	Y	X	N	X	BASE-R
Y	N	X	X	Y	X	N	Y	BASE-R
Y	X	N	N	Y	X	N	N	No FEC

If Frame loss ratio is too high.

- **If the Frame loss ratio is too high when attempting low latency and power then the auto-negotiation can be retried with the following settings which will increase the level of FEC being used.**

Retry Setting to use if No FEC has failed for too high Frame Error ratio					
Type of Port	Highest priority latency	Technology Ability 25GBASE-CR-S	Technology Ability 25GBASE-CR	25G Maximum FEC requested	Base -R FEC requested
25GBASE-CR	Y	Y	Y	N	Y
25GBASE-CR-S	Y	Y	N	N	Y

Retry Setting to use if Base-R FEC has failed for too high Frame Error ratio					
Type of Port	Highest priority latency	Technology Ability 25GBASE-CR-S	Technology Ability 25GBASE-CR	25G Maximum FEC requested	Base -R FEC requested
25GBASE-CR	X	Y	Y	Y	N
25GBASE-CR-S	NA				