Auto-Negotiation of Reach

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Auto-Negotiation

Originally defined to allow link-partners to select capability
*   Speed
*   Duplex
*   Pause

Defines priority to "Highest Common Denominator" and enables link partners to come to agreement on capability prior to link establishment.

Given the diverse power requirements for "Short Reach" mode of operation versus "Maximum Reach" *in higher speed devices*, it would be beneficial to allow Auto-Negotiation of Reach.

Higher Priority would go to "Maximum Reach"

A device shall advertise reach capability for each speed that it supports. (recommended for 40G and 10G)

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Examples on Priority Resolution

Link Partner 1
- 1000/10G/**40G**BASE-T
- Full Duplex, No Half Duplex
- 40G_Maximum Reach, 40G_Short Reach
- 10G_Maximum Reach, 10G_Short Reach

Link Partner 2
- 1000/10G/**40G**BASE-T
- Full Duplex, No Half Duplex
- **No** 40G_Maximum Reach, 40G_Short Reach
- 10G_Maximum Reach, 10G_Short Reach

Resolution: 40GBASE-T Full Duplex Short Reach

Note: Resolves to Highest Common Denominator

Examples on Priority Resolution

Link Partner 1
- 1000/10G/**40G**BASE-T
- Full Duplex, No Half Duplex
- 40G_Maximum Reach, 40G_Short Reach
- 10G_Maximum Reach, 10G_Short Reach

Link Partner 2
- 1000/10GBASE-T
- Full Duplex, No Half Duplex
- 40G_Maximum Reach, 40G_Short Reach
- 10G_Maximum Reach, 10G_Short Reach

Resolution: 10GBASE-T Full Duplex Maximum Reach

Note: Resolves to Highest Common Denominator

Examples on Priority Resolution

Link Partner 1
- 1000/10G/**40G**BASE-T
- Full Duplex, No Half Duplex
- 40G_Maximum Reach, 40G_Short Reach
- 10G_Maximum Reach, 10G_Short Reach

Link Partner 2
- 1000/10GBASE-T
- Full Duplex, **No** Half Duplex
- **No** 40G_Maximum Reach, **No** 40G_Short Reach
- **No** 10G_Maximum Reach, 10G_Short Reach

Resolution: 10GBASE-T Full Duplex Short Reach

Note: Resolves to Highest Common Denominator

Is an Objective Required?

Objectives define the *focus* of work to be done by a Task Force

Not all work done by a Task Force is defined by objectives.

NGBASE-T Study Group already has an objective to support Auto-Negotiation (Clause 28)

- Specifics around support for Clause 28 are left to the Task Force
- There is no objective related to bits defined within Clause 28 registers

Conclusion: No specific objective is required to include auto-negotiation of short-reach-mode.

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