400G CFP8 Form Factor Proposal

CFP MSA Member Companies:
Avago Technologies
Finisar Corp.
Fujitsu Optical Components
JDS Uniphase Corp.
NeoPhotonics Corp.
Oclaro, Inc.
Sumitomo Electric Industries
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Introduction

- This is a proposal for a new 400G Form Factor: CFP8
- The proposed CFP8 form factor is ~CFP2 size but supports 4x100G and 400G, i.e. 4x the CFP2’s 1x100G
- The CFP8 name follows the CFP2 and CFP4 naming convention of suffix designating relative bandwidth density
- The CFP8 uses a new 16x25G electrical I/O connector
- CFP8 Electrical I/O and Optical specifications are deferred to other standards organizations like IEEE and ITU-T
- Example IEEE specifications supported by CFP8:
  - 400GBASE-SR16 parallel MMF (16x25G NRZ)
  - 400GBASE-FR8/LR8 duplex SMF (8x50G PAM4 WDM)
  - 400GBASE-DR4 parallel SMF (4x100G PAM4)
  - CDAUI-16, CDAUI-8
- CFP8 will support other specifications
100G Form Factor Roadmap

Gen1

<table>
<thead>
<tr>
<th>MAC/PCS ASIC w/ 10G SerDes</th>
<th>CFP</th>
<th>Gen1</th>
</tr>
</thead>
<tbody>
<tr>
<td>10x10G</td>
<td></td>
<td>10G</td>
</tr>
<tr>
<td>CAUI-10</td>
<td></td>
<td>100GBASE-xRn</td>
</tr>
</tbody>
</table>

Gen2

<table>
<thead>
<tr>
<th>MAC/PCS ASIC w/ 10G SerDes</th>
<th>CFP2</th>
<th>Gen2</th>
</tr>
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<tbody>
<tr>
<td>10x10G</td>
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<td>10G</td>
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<tr>
<td>CAUI-10</td>
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<td>100GBASE-xRn</td>
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Gen2

<table>
<thead>
<tr>
<th>MAC/PCS ASIC w/ 10G SerDes</th>
<th>10:4, 10:10 PHY</th>
<th>Gen2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10x10G</td>
<td></td>
<td>100GBASE-xRn</td>
</tr>
<tr>
<td>CAUI-10</td>
<td></td>
<td>100GBASE-xRn</td>
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</table>

Gen3

<table>
<thead>
<tr>
<th>MAC/PCS ASIC w/ 25G SerDes</th>
<th>CFP4</th>
<th>Gen3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x25G</td>
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<td>100GBASE-xRn</td>
</tr>
<tr>
<td>CAUI-4</td>
<td></td>
<td>100GBASE-xRn</td>
</tr>
</tbody>
</table>

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Proposed 400G Form Factor Roadmap

Proposed in May’14 by the CFP MSA

Gen1
MAC/PCS ASIC w/ 25G SerDes
16x25G 16x25G CDP (~CFP size)
CDAUI-16 400GBASE-xRn

Gen2
MAC/PCS ASIC w/ 25G SerDes
16x25G 16x25G CFP8 (~CFP2 size)
CDAUI-16 400GBASE-xRn

Gen2
MAC/PCS ASIC w/ 25G SerDes
16x25G 16:16 PHY
16:8
CFP8 (~CFP2 size)
CDAUI-16 CDAUI-8 400GBASE-xRn

Gen3
MAC/PCS ASIC w/ 50G SerDes
8x50G CFP16 (~CFP4 size)
CDAUI-8 400GBASE-xRn
400GBASE-SR16 MMF MPO CFP8 Module
400GBASE-SR16 CFP8 Generic Diagram
400GBASE-FR8/LR8 SMF Duplex LC CFP8
400GBASE-FR8/LR8 CFP8 Generic Diagram

TOSA DML alternatives are EML and CW laser + MZ Mod.
400GBASE-DR4 SMF MPO CFP8 Module
400GBASE-DR4 CFP8 Generic Diagram

CDAUI-16

16:4 MUX

4:16 DEMUX

TX/Encoder

TX/Encoder

TX/Encoder

4x100 Gbps

OSA

Decoder

Decoder

Decoder

Decoder

TIA

PIN

TIA

PIN

TIA

PIN

TIA

PIN

400GBASE-DR4

1x12 SMF MPO

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Thank you