CMIS - Management Control of Optical Modules

ECOC 2022

Market Focus

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What is CMIS ?

CMIS = Common Management Interface Specification

Electrical
(OIF CEI, IEEE, etc)

Optical
(IEEE, MSAs, OIF)

Management = “the forgotten interface”

Why is Management becoming more important ?

Several key trends in the industry:

- Higher speed electrical interfaces (50G>100G>200G)
  - More complex equalization strategies
  - Demands closer coordination between host and module during initialization
- Increasing module complexity (DSP, FEC, Coherent, Firmware, etc)
  - More stuff to configure, initialize and monitor
  - Again, more coordination between host and module (different initialization times)
  - Firmware upgrade support
- Disaggregation of host and module supply chain (3rd party optics)
  - Management interface becomes a true “3rd party interop interface”
  - “Plug and play “ expectation

Management History - The Wild West !

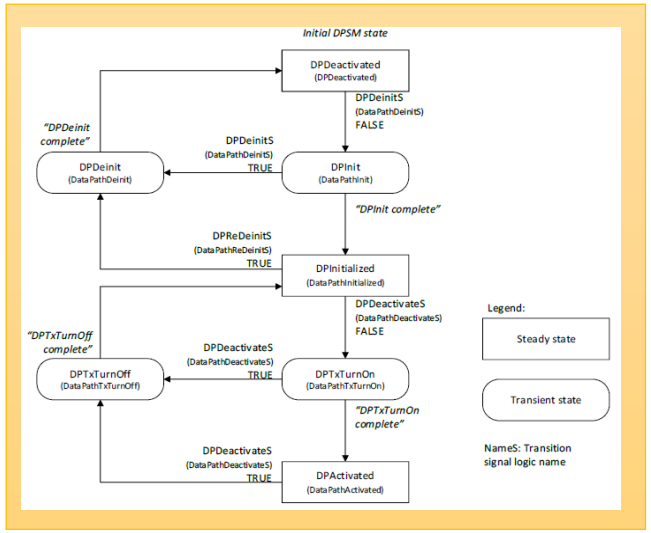
Historically each form factor and each generation had a different management interface specification:

SFF-8472
SFF-8436
SFF-8636
SFP-DD
SFF-8690
XFP/XFP-DWDM
MSA300
XENPAK
CFP MIS
… And more!

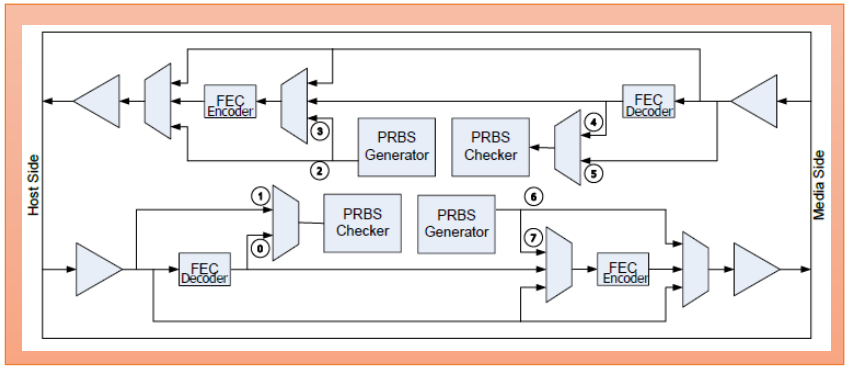
- Each time a new development starts, it's nearly from scratch!
- Forced to develop form-factor-specific designs
- Not scalable (as management becomes more complex and critical)

More History - Inconsistent/Ambiguous Standards

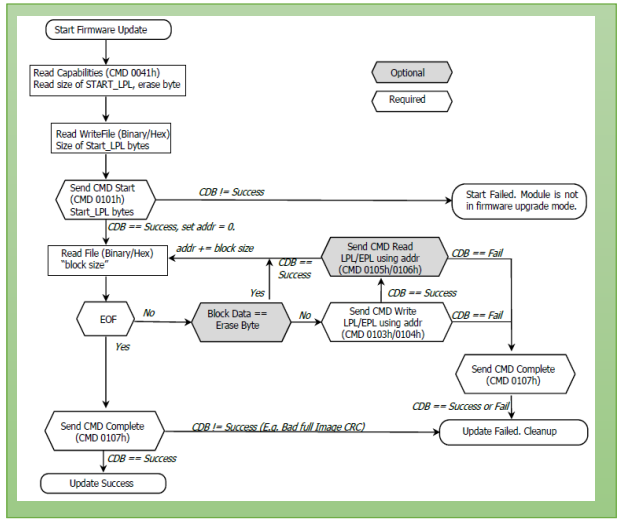
Host/Module Startup Sequence



Diagnostics Features



Firmware Upgrade



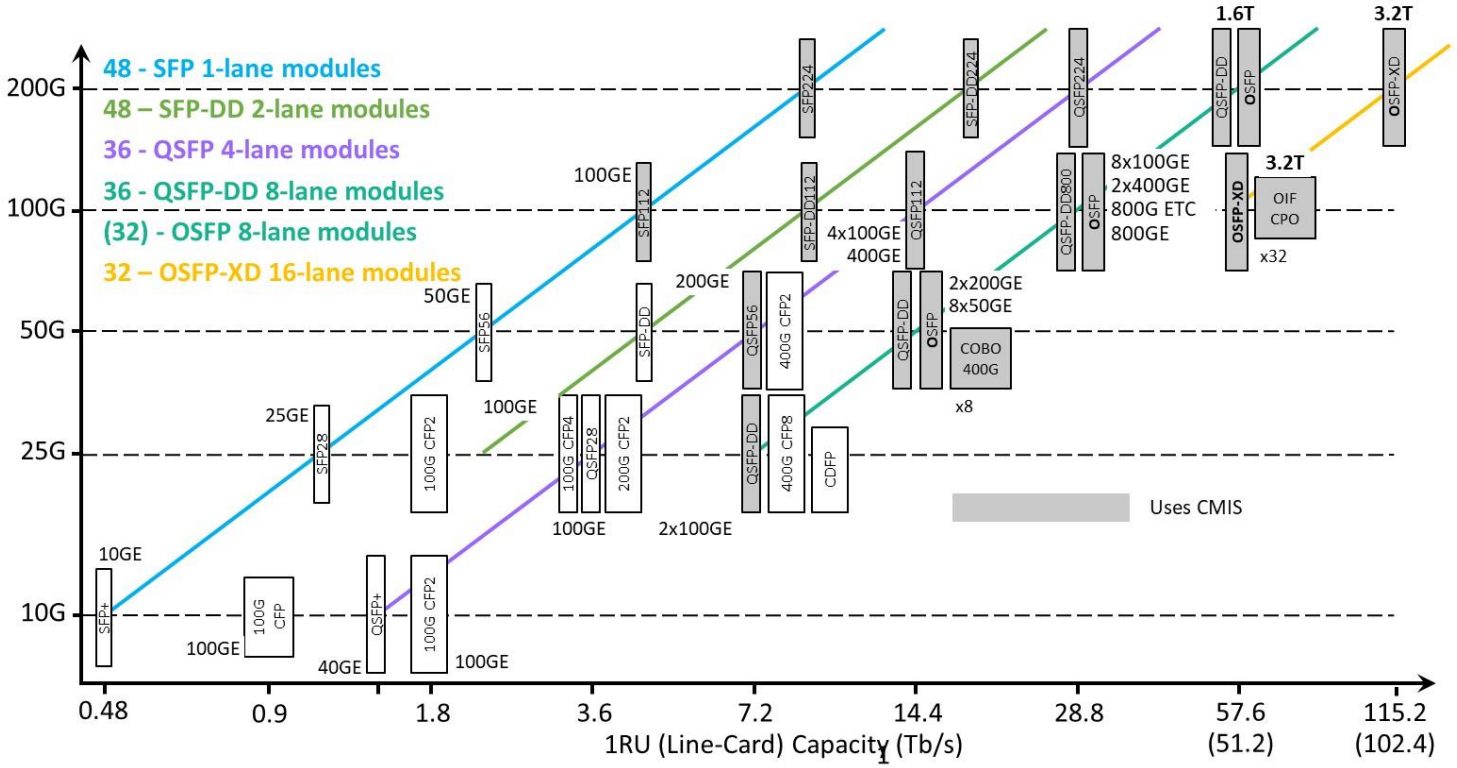
CMIS Brings …….

- State Machine mediated Initialization
- Goal: Plug and Play Initialization
- Extended from work on CFP MSA

- Standard definition for diagnostic features

- CDB (Command Data Block)
- Bulk data transfer
- Standard FW upgrade process

CMIS Adoption



Ref: Jeff Maki, Juniper

- CMIS is widely adopted and deployed throughout the industry
- Management interface of choice going forward
- Initial deployment was for 400G in 8 lane modules (QSFP-DD/OSFP)
- Being proposed for next generation 1 lane (SFP112) and 4 lane (QSFP112) modules

What's Next for CMIS ?

The OIF management track team is working on the next release of CMIS (scheduled for early CY 2023) which includes:

- Support for link training for next generation of higher speed (200G) electrical interfaces
- Management for co-packaged optics
  - Optical Engine
  - ELSFP (Resource module)
- Form-factor specific extensions
- On going minor feature additions

CMIS at ECOC 22 ?

- Pretty much every 400G/800G module on the show floor
- Live CMIS Demo @ OIF Booth (701)

OIF Workshop - "CMIS - Demystified"

hosted by *Lightwave*

Tuesday, October 4, 2022 - 8am-9:30am PT

- Free webinar, open to the public
- To register, visit https://www.lightwaveonline.com/webcasts

With widespread deployments and continuous feature additions, the Common Management Interface Specification (CMIS) is the leading management interface for modules ranging from copper cables to coherent pluggables.

CMIS is a powerful, far-reaching tool set you will need to be aware of for its impact on current and future generation designs. Join this OIF-sponsored workshop to hear from industry experts on what CMIS is and why it is important to the entire industry.

Speakers from: Ciena, Cisco, Google, Marvell, TE Connectivity

LIGHTWAVE

Summary - CMIS Values

- **Common:** Standardized rule book for all vendors -> all modules seamlessly plug and play into your host
- **Flexible:** CMIS is defined to support variety of modules with different speeds, form factors, link ratings, protocols, etc.
  - Same code base used for all
- **Extendable:** CMIS is futureproofed for tomorrow's pluggable innovations.

OIF

ACCELERATING MARKET ADOPTION OF OPTICAL NETWORKING TECHNOLOGIES

PROJECT HIGHLIGHTS 2022

What OIF Does

- Identifies Industry Needs and Gaps
- Develops Implementation Agreements
- Performs Interoperability Demonstrations

OPTICAL

800G
- Coherent
- Optimized for Cost
- Multivendor Interoperability

400ZR
- Coherent
- Optimized for Cost
- Multivendor Interoperability

IC-TROSA
- Low Power
- Small Form Factor

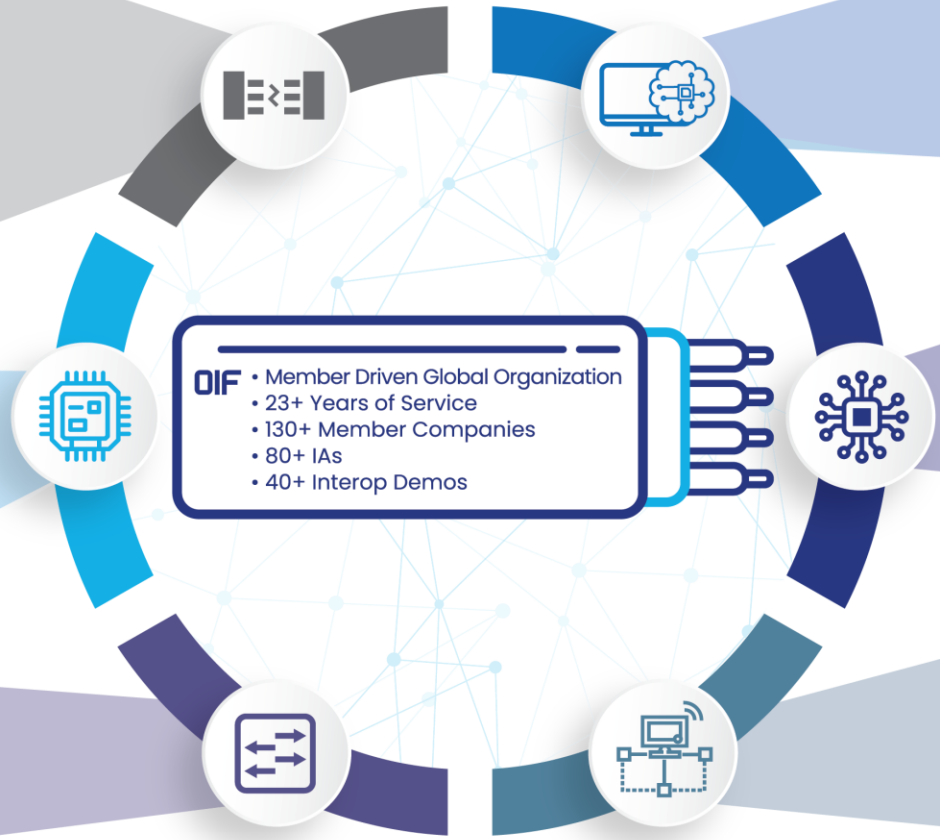
CO-PACKAGING

Co-Packaged Modules
- Densely Integrated Modules
- High Capacity, Energy Efficient

External Laser Sources
- Multivendor Interoperability

PROTOCOL

FlexE
- More Efficient
- Agile Networking



MANAGEMENT

CMIS and Coherent CMIS
- Common
- Flexible
- Extendable

ELECTRICAL

CEI
- High-Speed Building Blocks
- 224G, 112G, 56G, 28G

NETWORKING

Transport SDN APIs
- Automation
- Programmability
- Interoperability Tested

FOR MORE INFORMATION, VISIT WWW.OIFORUM.COM

OIF - Where the optical networking industry's interoperability work gets done

Who:

- 130+ member companies
  - Network operators
  - System vendors
  - Component vendors
  - Test & measurement vendors
  - Academia & research

What:

- Identify needs, gaps
- Develop interoperable optical, electrical, and control solutions
- Publish Implementation Agreements

Why:

- Accelerate adoption of advanced technology to connect a global, open networked world

Challenge: Support innovation while preserving interoperability, optimizing performance and cost

An international consortium that since 1998, has brought together industry groups from the data and telecom worlds