

OIF - CMIS Live Demo OFC 2023

Why was CMIS started?

- CMIS was originally conceived to address industry pain points in module management :
 - Management of multiple form factors
 - Module initialization variability
 - Breakout managing multiple different services (ie SFF-8024 codes)
- The industry has embraced CMIS leading to continued efforts to evolve CMIS with the addition of support for:
 - Co-packaging / ELSFP
 - Next gen modules based on 112G/224G
 - Link Training





Eliminating Complexity for Pluggable Modules

- Module speeds ranging from 100G to 800G. Unites a wide range of transceiver classes under one management protocol
- Fully form factor agnostic: CMIS implementation is consistent and interchangeable between OSFP, QSFP-DD and QSFP112 modules and more.
 - CMIS gives access to the lowspeed I2C interface to control and program the module.

WHAT IS CMIS?

> Common Management Interface Specification

• Supports module types ranging from:

- Active Cable Assemblies
 - Optical Transceivers
 - Coherent DWDM modules
 - Provides communication between all compliant optical modules, switches, and server Network Interface Cards

• Enables interoperability between module and host and is used to test and debug the module



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CMIS Demo Overview

- 3 host vendors (Cisco, Ciena, Juniper)
- 2 test equipment vendors (Exfo, MultiLane)
- 8 module suppliers (Cisco, Ciena, Juniper, Lumentum, Coherent, Source Photonics, TE, Astera Labs)
- 7 interface reaches ranging from passive copper to 400G coherent (DAC, AEC, AOC, DR4, FR4, ZR, ZR+)

One common management platform - CMIS





Grafana Dashboard

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2													
400GbE 100GbE					Optics Info			Optics Info		Optics Info	Link Speed	Link Status	
# 400GbE @ 100GbE Vendor : Julian						endor : J	UNIPER-2	2E1 CMIS Version: 5.0			Channel: 1550.12nm	400Gbps	DOWN
AppSel								AppSel			DPSM		Module Temperatur
Ap	Host Intf Code	Media Intf Code	Host	Media	Host	Media	Ap Sel	RAW Hex Value	Page	Address	0x44 0x44 0x44	1 0x44	50.31 °C
əci	400GAUI-8 C2M		Canes	Lancs	Assign	Assign		0x11 0x3e 0x81 0x01	ooh	86-89	Page 11h Address 128- 1h = DPDeartivated 2h = DPDrif 3	131 3h = DPDeinit	RAW: 0x3250
	(Annex 120E)	4002R, DWDM, amplified	8					0x11 0x3f 0x81 0x01	00h	90-93	4h = DPActivated, 5h = DPTxTurnOn, 6h = DPTx	(TurnOff, 7h = DPInitialized	Lower Page, Address 014-01
	400GAUI-8 C2M (Annex 120E)	400ZR, Single Wavelength, Unamplified						0x0d 0x3e 0x21 0x55	00h	94-97			
3	100GAUF2 C2M	400ZR. DWDM. amplified	2		85			0x11 0x46 0x81 0x01	00h	98-101	MSM ~	Tx Power	Rx Power
	(Annex 135G)							0x0d 0x46 0x21 0x55	00h	102-105		0.400	
4	(Annex 120E)	ZR-400-OFEC-16QAM						0x0d 0x47 0x21 0x55	00h	106-109	ModuleReady	0.103 mW	0.0 mW
	100GAUI-2 C2M	ZR-400-OFEC-16QAM			85			0x0d 0x48 0x21 0x55	00h	110-113	RAW: 00000110b Lower Page, Address 0x03, bits 3-1	RAW: 0x0404 Page 11h, Address 154-155	RAW: 0x0001 Page 11h, Address 156-157
	100GAUI-2 C2M							0x0d 0x49 0x21 0x55	00h	114-117			
6	(Annex 135G)	ZR-300-OFEC-8QAM			85			0x00 0x00 0x00 0x00	01h	223-226	ACS	Chromatic Dispersion	PDL
	100GAUI-2 C2M (Annex 135G)	ZR-200-OFEC-QPSK			85		10	0x00 0x00 0x00 0x00	01h	227-230			
8	100GAUI-2 C2M	ZR-100-OFEC-OPSK			85			0x00 0x00 0x00 0x00	01h	231-234	0x40 0x40 0x40 0x40	0 ps/nm	0 0 dB
	(Annex 135G)						12	0x00 0x00 0x00 0x00	01h	235-238	0x40 0x40 0x40 0x40	RAW: 0x0000	RAW: 0x0000
9							13	0x00 0x00 0x00 0x00	01h	239-242	Page 11h, Address 206-214	Page 25h Address 140-141	Page 25h Address 148-149
11							14	0x00 0x00 0x00 0x00	01h	243-246			
							15	0x00 0x00 0x00 0x00	01h	247-250	PreFEC BER	CFO	OSNR
14											1.00E+00	0 MHz	20.0 dB
15											RAW: 0xabe8	RAW: 0x0000	RAW: 0x00c8





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CMIS Evolution Timeline



25 YEARS

CMIS Modules – Large range of form factors, applications and capabilities



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CMIS Hosts – Large range of applications including routers and test equipment







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CMIS Adoption





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What's next for CMIS

- The OIF management track team is working on the next release of CMIS which will include:
 - Working with the OIF electrical track to support link training for upcoming higher speed electrical interfaces like CEI-112 and CEI-224.
 - Working with the OIF co-packaging track to define management of CPO and ELSFP modules.
 - Working with other MSA groups to update the definition of Form Factor Specific Hardware Signals.

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• Expanding the number of supported applications by growing the number of appsels.





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CMIS Values

- Common: Standardized rule book for all MSA 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, use cases, etc.
- **Extendable:** CMIS is futureproofed for tomorrow's pluggable innovations.



CMIS Demo – Participating Members



COHERENT EXFO JUNPEG















scan for demo info

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Wednesday March 8th

"Bringing Order to Chaos – OIF" 3pm-4pm in Theater 3

Moderator: **Stephen Hardy**, *Lightwave* Panelists: **Karl Gass**, OIF PLL WG Optical Vice Chair **Vladimir Kozlov**, LightCounting **Sterling Perrin**, Heavy Reading; **Nathan Tracy**, OIF MA&E Co-Chair PLL, TE Connectivity **Alan Weckel**, 650 Group Celebration Reception 4pm-5pm Booth #5101



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