

DCP

MIB Description

R12.0.1

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1 Introduction

This document provides information about the SNMP implementation, standard MIBs and traps supported.

1.1 Document Revision History

Revision	Date	Description of changes
2.0	2017-12-15	First release with Standard SNMP MIBS
4.0	2018-11-15	Added Enterprise specific MIBS
5.3	2020-06-23	Added dcpInterfaceDescription for DCP-INTERFACE-MIB Added dcpAlarmLogListInterfaceDescription for DCP-ALARM-MIB Added Enterprise specific SNMP Traps with dcpAlarmLogListInterfaceDescription
6.0	2021-01-22	Added dcpAlarmActiveListInterfaceDescription to dcpAlarmActiveList in DCP-ALARM-MIB
6.1	2021-06-07	Added DCP-OCH-MIB. Updated dcpInterfaceRxPower and dcpInterfaceTxPower for DCP-INTERFACE-MIB Updated dcpLinkviewLocalPower for DCP-LINKVIEW-MIB
7.0	2022-01-13	Template created.
7.0.1 A	2022-05-12	Added DCP-TOPOLOGY-MIB. Added dcpInterfacePortType and dcpInterfacePortMode to DCP-INTERFACE-MIB. Corrected sysdescr with missing chassis Updated ifindex with DCP-R values
7.0.2 A	2022-06-14	No update
7.0.5 A	2022-07-07	No update
7.1.1 A	2022-10-19	No update
7.1.2 A	2023-01-11	No update
8.0.1A	2023-04-27	Added DCP-ENV-MON-MIB
8.0.1B	2023-05-26	Added dcpInterfaceTrxTable and dcpInterfaceTrxLanesTable to DCP-INTERFACE-MIB.
8.1.1A	2023-06-29	Added dcpInterfaceTrxStateOfPolarizationROC attribute to DCP-INTERFACE-MIB. Change of dcpInterfaceTrxDiffGroupDelay and dcpInterfaceTrxQmargin to support 1 decimal in DCP-INTERFACE-MIB.
8.1.3A	2023-08-22	Corrections under DCP-ENV-MON-MIB.
8.1.4A	2023-10-12	No update
8.1.5 A	2023-11-02	No update
8.1.6 A	2023-11-20	No update
8.1.7 A	2024-01-04	No update

9.0.1 A	2024-01-19	No update
10.0.1 A	2024-07-03	Added clarification for SNMP get
10.2.1 A	2024-12-09	Updated DCP-INTERFACE-MIB with new attributes dcplInterfaceOsnr and dcplInterfaceRemoteOsnr
11.0.1 A	2024-12-16	Updated range for dcplInterfaceIndex to 1..10000000. Added dcplInterfaceFlexgridTable. Added dcpEnvMonVoltageTable
11.0.2 A	2024-12-17	Updated help text for flexgrid Tx and Rx power levels
11.1.1 A	2025-03-26	Both updates from R10.2.1 and R11.0.1 are included in this document.
11.3.1 A	2025-04-24	No update
12.0.1 A	2025-06-24	Added SNMPv3 traps

2 The Management Architecture

2.1 Management Interfaces

The SNMP manager may use the SNMP Interface to manage the DCP nodes in the network.

The SNMP Interface supports following traps:

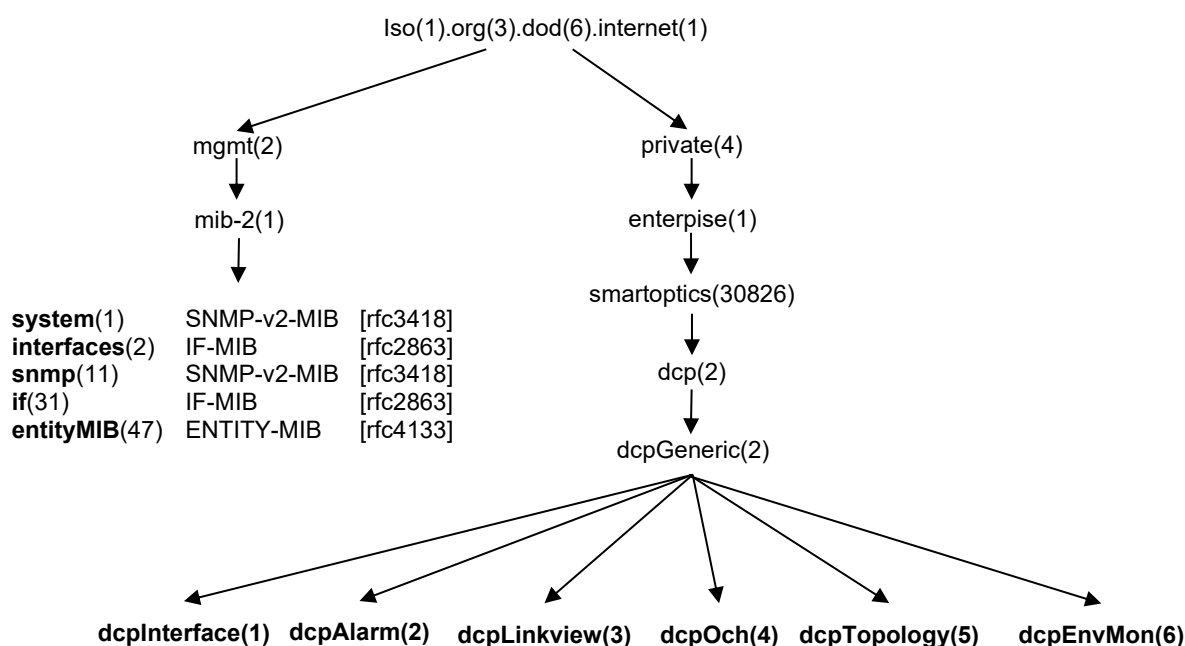
1. SNMPv2c for Traps
2. SNMPv3 for Traps

The DCP system supports the following SNMP get commands:

1. GET
Retrieves the value of one or more SNMP variables.
2. GETNEXT
Retrieves the value of the next SNMP variable in the MIB tree after the specified variable.
3. GETBULK
Efficiently retrieves a large set of SNMP variables in a single request. Supports a maximum of 10 variables.

SNMP Set operations are not supported.

2.2 MIB Structure



2.2.1 The Standard MIBs

The standard MIBs are created by the Internet Engineering Task Force (IETF) and documented in various RFCs. This is a list of the standard MIBs supported by the DCP.

- rfc2863 – IF-MIB
- rfc3418 – SNMPv2-MIB
- rfc2578 – SNMPv2-SMI
- rfc2579 – SNMPv2-TC

- rfc2580 – SNMPv2-CONF
- rfc4133 – ENTITY-MIB
- rfc3411 – SNMP-FRAMEWORK-MIB
- rfc2233 – IANAifType-MIB

2.2.2 The Enterprise MIBs

The enterprise MIBs are developed and supported by a specific equipment manufacturer. The DCP-Series supports the following MIBs from Smartoptics.

- SO-TC-MIB – Contains Textual Conventions used by Smartoptics MIB files.
- SO-MIB – The Main Smartoptics MIB file.
- DCP-MIB – The Main DCP MIB file.
- DCP-INTERFACE-MIB – Contains information about the DCP interfaces.
- DCP-ALARM-MIB – Contains trap definitions and alarm specific information.
- DCP-LINKVIEW-MIB – Contains information about DCP-M's link status and of the fiber between the sites.
- DCP-OCH-MIB – Contains information about optical channels for the DCP-F family.
- DCP-TOPOLOGY-MIB – Contains information about topology for the DCP-F family.
- DCP-ENVIRONMENT-MIB – Contains information about Environment data for the DCP platform.

2.2.3 SNMP Traps

The DCP can send notifications to an SNMP manager when a significant event occurs.

SNMP Traps are defined in either the standard or enterprise MIBs.

The DCP supports the standard coldStart and enterprise traps according to the severity level of the alarm.

3 Standard SNMP MIBs

This chapter contains information about the standard MIBs supported by the DCP.

3.1 SNMPv2-MIB

Standard RFC-3418

3.1.1 The System Scalar Objects

Path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).system(1)

OID: 1.3.6.1.2.1.1

OID	Object	Access	Type	Value
1	SysDescr	read-only	DisplayString (SIZE (0..255))	"Smartoptics, DCP-2", "Smartoptics, DCP-M40-PAM4-ER", "Smartoptics, DCP-M40-PAM4-ER+", "Smartoptics, DCP-M8-PAM4" "Smartoptics, DCP-M40-PAM4-ZR" "Smartoptics, DCP-M40-C-ZR+" "Smartoptics, DCP-R-9D-CS"
2	SysObjectID	read-only	OBJECT IDENTIFIER	dcp
3	SysUpTime	read-only	TimeTicks	
4	SysContact	read-only	DisplayString (SIZE (0..255))	Default: ""
5	SysName	read-only	DisplayString (SIZE (0..255))	Default: "hostname"
6	SysLocation	read-only	DisplayString (SIZE (0..255))	Default: ""

Table 1. The System Objects.

3.2 The IF-MIB

Standard RFC-2863

The DCP supports the ifTable of the IF-MIB.

3.2.1 The ifTable

Path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).interfaces(2).ifTable(2).ifEntry(1)

OID: 1.3.6.1.2.1.2.2.1

OID	Object	Access	Type	Value
1	ifIndex	read-only	Integer32	1-5 eth0-eth4 101 CONSOLE 201-202 psu 301 fan 100000 and up is optical ports. For DCP-R Family 100001-100006 eth0-eth5 100011 CONSOLE 100021-100022 psu 100031 fan 100111 and up is optical ports
2	ifDescr	read-only	DisplayString (SIZE (0..255))	eth0-4 CONSOLE psu fan if-c/s/l tx if-c/s/l rx if-c/line-tx if-c/line-rx if-c/channelid-tx if-c/channelid-rx
3	ifType	read-only	INTEGER	1 = Other 6 = ethernetCsmacd 33 = RS232 interface 195 = OpticalChannel 196 = OpticalTransport
4	ifMtu	read-only	Integer32	1500 – LAN interface 0 – otherwise
5	ifSpeed	read-only	Gauge32	An estimate of the interface's current bandwidth in bits per second. For a sub-layer which has no concept of bandwidth, this object should be zero.
6	ifPhysAddress	read-only	OCTET STRING	MAC Address for the LAN interface otherwise empty.
7	ifAdminStatus	read-only	INTEGER	1 – Up: The interface is up. 2 – Down: The interface is down.

Table 2. The ifTable of IF-MIB.

3.3 ENTITY-MIB

Standard RFC-4133

The DCP supports the entPhysicalTable of the ENTITY-MIB. This table contains information about the DCP equipment.

3.3.1 entPhysicalTable

Path: iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).entityMIB(47).entityMIBObjects(1).entityPhysical(1).entPhysicalTable(1).entPhysicalEntry(1)

OID: 1.3.6.1.2.1.47.1.1.1.1

OID	Object	Access	Type	Value
1	entPhysicalIndex	read-only	PhysicalIndex	The index for this entry
2	entPhysicalDescr	read-only	SnmpAdminString	This table contains one row per physical entity. There is always at least one row for an 'overall' physical entity.
3	entPhysicalVendorType	read-only	AutonomousType	0.0
4	entPhysicalContainedIn	read-only	PhysicalIndexOrZero	The value of the entPhysicalIndex for the physical entity which 'contains' this physical entity
5	entPhysicalClass	read-only	PhysicalClass	Stack, chassis, port, container, powerSupply, module or fan.
6	entPhysicalParentRelPos	read-only	Integer32	An indication of the relative position of this 'child'.
7	entPhysicalName	read-only	SnmpAdminString	The textual name of the physical entity.
8	entPhysicalHardwareRev	read-only	SnmpAdminString	The vendor-specific hardware revision string of the entity.
9	entPhysicalFirmwareRev	read-only	SnmpAdminString	Empty
10	entPhysicalSoftwareRev	read-only	SnmpAdminString	The vendor-specific software revision string of the entity.
11	entPhysicalSerialNum	read-only	SnmpAdminString	The vendor-specific serial number string of the entity.
12	entPhysicalMfgName	read-only	SnmpAdminString	The name of the manufacturer of this physical component.
13	entPhysicalModelName	read-only	SnmpAdminString	The vendor-specific model name identifier string associated with this physical component.
14	entPhysicalAlias	read-only	SnmpAdminString	The Port Alias of the port.
15	entPhysicalAssetID	read-only	SnmpAdminString	Empty

16	entPhysicalIsFRU	read-only	SnmpAdminString	True if the physical entity is field replaceable.
17	entPhysicalMfgDate	read-only	SnmpAdminString	Empty
18	entPhysicalUris	read-only	SnmpAdminString	Empty

Table 3. The entPhysicalTable of ENTITY-MIB.

4 DCP Enterprise-Specific MIBs

This chapter contains transceiver information about the enterprise-specific MIBs supported by the DCP

4.1 DCP-INTERFACE-MIB

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpInterface(1)

OID: 1.3.6.1.4.1.30826.2.2.1

4.1.1 dcpInterfaceTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpInterface(1).dcpInterfaceObjects(1).dcpInterfaceTable(1)

OID: 1.3.6.1.4.1.30826.2.2.1.1.1

The dcpInterfaceTable contains information about the optical interfaces of the system. The information is the same as when running the CLI command 'show interface'.

OID	Object	Access	Type	Value
1	dcpInterfaceIndex	read-only	Unsigned32	A unique index for each interface. Range 1 to 10000000
2	dcpInterfaceName	read-only	DisplayString	The name of the interface
3	dcpInterfaceRxPower	read-only	OpticalPower1Decimal	The optical power received at the Rx port in units of 0.1 dBm.
4	dcpInterfaceTxPower	read-only	OpticalPower1Decimal	The optical power transmitted at the Tx port in units of 0.1 dBm.
5	dcpInterfaceStatus	read-only	InterfaceStatus	The operational state for the interface. idle(1), down(2), up(3)
6	dcpInterfaceAlarm	read-only	ItuPerceivedSeverity	The highest alarm severity of the interface.
7	dcpInterfaceFormat	read-only	DisplayString	The traffic format of the interface.
8	dcpInterfaceWavelength	read-only	DisplayString	The ITU channel wavelength.
9	dcpInterfaceChannelId	read-only	DisplayString	DWDM or CWDM channel identification.
10	dcpInterfaceDescription	read-only	<DisplayString	User configurable description string for the interface.
11	dcpInterfacePortType	read-only	<DisplayString	Port type of the interface
12	dcpInterfacePortMode	read-only	InterfacePortMode	Interface portmode
13	dcpInterfaceOsnr	read-only	OpticalPower1Decimal	The OSNR for the Tx port in the local node. Reported in steps of 0.1dB. Zero indicates N/A.
14	dcpInterfaceRemoteOsnr	read-only	OpticalPower1Decimal	The OSNR for the Tx port in the remote node. Reported in steps of 0.1dB Zero indicates N/A.

Table 4. The dcpInterfaceTable of DCP-INTERFACE-MIB.

4.1.2 dcpInterfaceTrxTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpInterface(1).dcpInterfaceTrxObjects(3).dcpInterfaceTrxTable(1)

OID: 1.3.6.1.4.1.30826.2.2.1.3.1

The dcpInterfaceTrxTable contains information about the optical interfaces of the system. The information is the same as when running the CLI command 'show interface'.

OID	Object	Access	Type	Value
1	dcpInterfaceTrxIndex	read-only	Unsigned32	A unique index for each interface
2	dcpInterfaceTrxName	read-only	DisplayString	The name of the interface
3	dcpInterfaceTrxLanes	read-only	Unsigned32	Number of lanes for the interface.
4	dcpInterfaceTrxTemperature	read-only	OpticalPower1Decimal	The transceiver temperature in units of 0.1 C.
5	dcpInterfaceTrxTemperatureHighWarningThreshold	read-only	OpticalPower1Decimal	The high warning temperature alarm threshold in units of 0.1 C.
6	dcpInterfaceTrxTemperatureHighAlarmThreshold	read-only	OpticalPower1Decimal	The high warning temperature alarm threshold in units of 0.1 C.
7	dcpInterfaceTrxWavelength	read-only	DisplayString	The ITU channel wavelength in units of nm.
8	dcpInterfaceTrxChannelId	read-only	DisplayString	DWDM or CWDM channel identification.
9	dcpInterfaceActualFrequency	read-only	OpticalPower1Decimal	The actual frequency used by the transceiver in units of 0.1 THz.
10	dcpInterfaceTrxWantedFrequency	read-only	< OpticalPower1Decimal	The wanted frequency used by the transceiver in units of 0.1 THz.
11	dcpInterfaceTrxGridSpacing	read-only	< OpticalPower1Decimal	The grid spacing used by the transceiver in units of 0.1 GHz.
12	dcpInterfaceTrxTotalRxPower	read-only	OpticalPower1Decimal	The total received power measured by the transceiver in units of 0.1 dBm.
13	dcpInterfaceTrxSignalRxPower	read-only	OpticalPower1Decimal	The total signal received power measured by the transceiver in units of 0.1 dBm.
14	dcpInterfaceTrxTxPower	read-only	OpticalPower1Decimal	The transmitted power transmitted by the transceiver in units of 0.1 dBm.
15	dcpInterfaceTrxTxBias	read-only	OpticalPower1Decimal	The transmitter bias current measured by the transceiver in units of 0.1 mA.
16	dcpInterfaceTrxRxSensitivity	read-only	OpticalPower1Decimal	The receive sensitivity level for the transceiver in units of 0.1 dBm.

17	dcplInterfaceTrxRxLosThresh	read-only	OpticalPower1Decimal	The rx LOS threshold for the transceiver in units of 0.1 dBm.
18	dcplInterfaceTrxModulationType	read-only	DisplayString	The modulation type used by the transceiver.
19	dcplInterfaceTrxBandwidth	read-only	Unsigned32	The bandwidth used by the transceiver lane in units of Gb/s.
20	dcplInterfaceTrxFec	read-only	DisplayString	The FEC used by the transceiver.
21	dcplInterfaceTrxPulseShaping	read-only	DisplayString	Shows if Pulse Shaping is enabled or disabled for the transceiver.
22	dcplInterfaceTrxCertified	read-only	DisplayString	Indicates if the transceiver is certified or not.
23	dcplInterfaceTrxOsnr	read-only	OpticalPower1Decimal	The OSNR measured by the transceiver lane in units of 0.1 dB.
24	dcplInterfaceTrxChromaticDispersion	read-only	Integer32	The Chromatic Dispersion measured by the transceiver in units of ps/nm.
25	dcplInterfaceTrxDiffGroupDelay	read-only	OpticalPower1Decimal	The Diff Group Delay measured by the transceiver in units of 0.1 ps.
26	dcplInterfaceTrxPolarizationDependentLoss	read-only	OpticalPower1Decimal	The Polarization Dependent Loss measured by the transceiver in units of 0.1 dB.
27	dcplInterfaceTrxPreFecBerMantissa	read-only	OpticalPower1Decimal	The Mantissa for the Pre FEC BER measured by the transceiver.
28	dcplInterfaceTrxPreFecBerExponent	read-only	Integer32	The Exponent for the Pre FEC BER measured by the transceiver.
29	dcplInterfaceTrxPreFecBerAvgMantissa	read-only	OpticalPower1Decimal	The Mantissa for the Pre FEC BER Average measured by the transceiver.
30	dcplInterfaceTrxPreFecBerAvgExponent	read-only	Integer32	The Exponent for the Pre FEC BER Average measured by the transceiver.
31	dcplInterfaceTrxUncorrectedBerMantissa	read-only	OpticalPower1Decimal	The Mantissa for the Uncorrected BER measured by the transceiver.
32	dcplInterfaceTrxUncorrectedBerExponent	read-only	Integer32	The Exponent for the Uncorrected BER measured by the transceiver.
33	dcplInterfaceTrxPostFecBerMantissa	read-only	OpticalPower1Decimal	The Mantissa for the Post FEC BER measured by the transceiver.
34	dcplInterfaceTrxPostFecBerExponent	read-only	Integer32	The Exponent for the Post FEC BER measured by the transceiver.
35	dcplInterfaceTrxQvalue	read-only	OpticalPower1Decimal	The Q value measured by the transceiver in units of 0.1 dBQ.
36	dcplInterfaceTrxQmargin	read-only	OpticalPower1Decimal	The Q margin measured by the transceiver in units of 0.1 dBQ.
37	dcplInterfaceTrxStateOfPolarizationROC	Read-only	Unsigned32	The State of Polarization ROC in units of krad/s.

4.1.3 dcplInterfaceTrxLanesTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcplInterface(1).dcplInterfaceTrxLanesObjects(4).dcplInterfaceTrxLanesTable(1)

OID: 1.3.6.1.4.1.30826.2.2.1.4.1

The dcplInterfaceTrxLanesTable contains information about the optical interfaces of the system. The information is the same as when running the CLI command 'show interface'.

OID	Object	Access	Type	Value
1	dcplInterfaceTrxLanesIndex	read-only	Unsigned32	A unique index for each interface
2	dcplInterfaceTrxLanesName	read-only	DisplayString	The name of the interface
3	dcplInterfaceTrxLanesRxPower	read-only	OpticalPower1Decimal	The optical power received at the Rx port for the lane in units of 0.1 dBm.
4	dcplInterfaceTrxLanesTxPower	read-only	OpticalPower1Decimal	The optical power transmitted at the Tx port for the lane in units of 0.1 dBm.
5	dcplInterfaceTrxLanesRxSensitivity	read-only	OpticalPower1Decimal	The Rx sensitivity for the lane in units of 0.1 dBm.
6	TrxLanesTxBias	read-only	OpticalPower1Decimal	The Tx Bias for the lane in units of 0.1 mA.

4.1.4 dcplInterfaceFlexgridTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcplInterface(1).dcplInterfaceFlexgridTable(5).dcplInterfaceFlexgridTable (1)

OID: 1.3.6.1.4.1.30826.2.2.1.5.1

The dcplInterfaceFlexgridTable contains information about the flexgrid settings of the system.

OID	Object	Access	Type	Value
1	dcplInterfaceFlexgridIndex	read-only	Unsigned32	A unique index for each interface
2	dcplInterfaceFlexgridName	read-only	DisplayString	The name of the interface
3	dcplInterfaceFlexgridRxPower	read-only	OpticalPower1Decimal	The optical power received at the Rx port for one frequency slot in units of 0.1 dBm.
4	dcplInterfaceFlexgridTxPower	read-only	OpticalPower1Decimal	The optical power transmitted at the Tx port for one frequency slot in units of 0.1 dBm.

5	dcplInterfaceFlexgridStatus	read-only	InterfaceStatus	The operational state for a port.
6	dcplInterfaceFlexgridAlarm	read-only	ItuPerceivedSeverity	The highest alarm severity of the interface.
7	dcplInterfaceFlexgridFormat	read-only	DisplayString	The traffic format of the interface.
8	dcplInterfaceFlexgridWavelength	read-only	DisplayString	The ITU channel wavelength.
9	dcplInterfaceFlexgridChannelId	read-only	DisplayString	DWDM or CWDM channel identification.
10	dcplInterfaceFlexgridDescription	read-only	DisplayString	User configurable description string for the interface.
11	dcplInterfaceFlexgridPortType	read-only	DisplayString	Port type of the interface.
12	dcplInterfaceFlexgridPortMode	read-only	InterfacePortMode	Interface portmode

4.2 DCP-ALARM-MIB

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpAlarm(2)

OID: 1.3.6.1.4.1.30826.2.2.2

4.2.1 dcpAlarmGeneralList

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpAlarm(2).dcpAlarmGeneral(1).dcpAlarmGeneralList(1)

OID: 1.3.6.1.4.1.30826.2.2.2.1.1

The dcpAlarmGeneralList contains alarm counters for highest severity, total active alarms, total alarm log and last Sequence number that's used in SNMP traps.

OID	Object	Access	Type	Value
1	DcpAlarmGeneralHighestSeverity	read-only	ItuPerceivedSeverity	The Highest Severity of the active alarms in the System. cleared (1), indeterminate (2), critical (3), major (4), minor (5), warning (6)
2	DcpAlarmGeneralActiveCritical	read-only	Unsigned32	The number of active critical alarms in the system.
3	DcpAlarmGeneralActiveMajor	read-only	Unsigned32	The number of active major alarms in the system.
4	DcpAlarmGeneralActiveMinor	read-only	Unsigned32	The number of active minor alarms in the system.
5	DcpAlarmGeneralActiveWarning	read-only	Unsigned32	The number of active warning alarms in the system.
6	dcpAlarmGeneralNumberActiveList	read-only	Unsigned32	The number of active alarms in the system. This is also the number of alarms in the dcpAlarmActiveListTable.
7	DcpAlarmGeneralNumberLogList	read-only	Unsigned32	The number of alarms (active and deactivated) present in the system. This number matches the number of rows in the dcpAlarmLogTable.
8	dcpAlarmGeneralLastTrapSeqNumber	read-only	Unsigned32	The sequence number used when the last Enterprise trap was sent.

Table 5. The dcpAlarmGeneralList of DCP-ALARM-MIB.

4.2.2 dcpAlarmActiveListTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpAlarm(2).dcpAlarmObjects (2). DcpAlarmActiveListTable(1)

OID: .1.3.6.1.4.1.30826.2.2.2.2.1

The dcpAlarmActiveListTable keeps a list of the current active alarms of the System.

OID	Object	Access	Type	Value
1	dcpAlarmActiveListIndex	read-only	Unsigned32	A unique index assigned to each alarm.
2	dcpAlarmActiveListLocation	read-only	DisplayString	The location from where the alarm originated. chassis, slot 1, slot 2, psu-1/1, psu-1/2 or fan-1/1.
3	dcpAlarmActiveListInterfaceName	read-only	DisplayString	The interface name from where the alarm originated. If not an interface this value will be empty.
4	dcpAlarmActiveListText	read-only	DisplayString	The alarm text for the alarm.
5	dcpAlarmActiveListSeverity	read-only	ItuPerceivedSeverity	The severity of the alarm as defined in ITU-T X.733. cleared (1), indeterminate (2), critical (3), major (4), minor (5), warning (6)
6	dcpAlarmActiveListStartTime	read-only	DateAndTime	The time when the alarm was activated. The time is in Coordinated Universal Time (UTC).
7	dcpAlarmActiveListSeqNumber	read-only	Unsigned32	This OID currently always returns 0.
8	dcpAlarmActiveListInterfaceDescription	Read-only	DisplayString	The associated interface description with the alarm.

Table 6. The dcpAlarmActiveListTable of DCP-ALARM-MIB.

4.2.3 dcpAlarmLogTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smaroptics(30826).dcp(2).dcpGeneric(2).dcpAlarm(2).dcpAlarmObjects (2). dcpAlarmLogTable (2)

OID: 1.3.6.1.4.1.30826.2.2.2.2.2

The dcpAlarmLogTable keeps a list of active and deactivated alarms of the System.

OID	Object	Access	Type	Value
1	dcpAlarmLogListIndex	read-only	Unsigned32	A unique index assigned to each alarm.
2	dcpAlarmLogListLocation	read-only	DisplayString	The location from where the alarm originated. chassis, slot 1, slot 2, psu-1/1, psu-1/2 or fan-1/1.
3	dcpAlarmLogListInterfaceName	read-only	DisplayString	The interface name from where the alarm originated. If not an interface this value will be empty.
4	dcpAlarmLogListText	read-only	DisplayString	The alarm text for the alarm.
5	dcpAlarmLogListSeverity	read-only	ItuPerceivedSeverity	The severity of the alarm as defined in ITU-T X.733. cleared (1), indeterminate (2), critical (3), major (4), minor (5), warning (6)
6	dcpAlarmLogListStartTime	read-only	DateAndTime	The time when the alarm was activated. The time is in Coordinated Universal Time (UTC)
7	dcpAlarmLogListEndTime	read-only	DateAndTime	The time when the alarm was deactivated. The time is in Coordinated Universal Time (UTC)
8	dcpAlarmLogListSeqNumber	read-only	Unsigned32	This OID currently always returns 0.
9	dcpAlarmLogListInterfaceDescription	read-only	DisplayString	The interface description field from where the alarm originated.

Table 7. The dcpAlarmLogTable of DCP-ALARM-MIB.

4.3 DCP-LINKVIEW-MIB

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpLinkview(3)

OID: 1.3.6.1.4.1.30826.2.2.3

4.3.1 dcpLinkviewTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpLinkview(3).dcpLinkviewObjects(1).dcpLinkviewTable(1).

OID: 1.3.6.1.4.1.30826.2.2.3.1.1

The dcpLinkviewTable contains information about the optical links of the systems. The information is the same as when running the CLI command 'show linkview detail'.

OID	Object	Access	Type	Value
1	dcpLinkviewIndex	read-only	Unsigned32	A unique index for each interface.
2	dcpLinkviewLocalHostname	read-only	DisplayString	The hostname of the local system.
3	dcpLinkviewLocalName	read-only	DisplayString	The name of the local interface.
4	dcpLinkviewLocalStatus	read-only	InterfaceStatus	The operational state for the interface. idle(1), down(2), up(3)
5	dcpLinkviewLocalPower	read-only	OpticalPower1Decimal	The optical power present at the line interface, all wavelengths combined in units of 0.1 dBm.
6	dcpLinkviewFiberLoss	read-only	Unsigned32	The fiber loss in units of 0.1 dB.
7	dcpLinkviewFiberAttenuation	read-only	Unsigned32	The fiber attenuation in units of 0.01 dB/km.
8	dcpLinkviewFiberLength	read-only	Unsigned32	The fiber length in units of 0.1 km.
9	dcpLinkviewFiberDispersion	read-only	Unsigned32	The calculated dispersion based on the measured fiber length. In units of 1 ps/nm.
10	dcpLinkviewFiberType	read-only	DisplayString	The fiber type configured, currently only G.652 is supported.
11	dcpLinkviewFiberDispComp	read-only	Integer32	The compensated dispersion value by the system in units of 1 ps/nm.
12	dcpLinkviewFiberDispFinal	read-only	Integer32	Residual (remaining) dispersion in units of 1 ps/nm.
13	dcpLinkviewFiberUtilization	read-only	Gauge32	Wavelength utilization represented in percentage of max utilization.
14	dcpLinkviewRemotePower	read-only	Integer32	The power level at the interface in units of 0.1 dBm.
15	dcpLinkviewRemoteName	read-only	DisplayString	The name of the remote interface
16	dcpLinkviewRemoteHostname	read-only	DisplayString	The hostname of the remote system.

Table 8. The dcpLinkviewTable of DCP-LINKVIEW-MIB.

4.4 DCP-OCH-MIB

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2). dcpOch(4)

OID: 1.3.6.1.4.1.30826.2.2.4

4.4.1 dcpOchGeneralTable

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpOch(4).dcpOchGeneral(1).dcpOchGeneralTable(1).

OID: 1.3.6.1.4.1.30826.2.2.4.1.1

The dcpOchGeneralTable contains information about the OCh ports of the systems.

OID	Object	Access	Type	Value
1	dcpOchGeneralIndex	not-accessible	Unsigned32	A unique index for each interface.
2	dcpOchGeneralPortName	read-only	DisplayString	The port name.
3	dcpOchGeneralSpacing	read-only	DcpHundreds	The channel spacing used in units of 0.01 GHz.
4	dcpOchGeneralMaxChannels	read-only	Unsigned32	The number of channels that is used for the optical power channel plan for the EDFA.
5	dcpOchGeneralActiveChannels	read-only	Unsigned32	The number of active channels currently in regulation.
6	dcpOchGeneralUtilization	read-only	Gauge32	The number of channels used in the system in units of %.
7	dcpOchGeneralConfiguredChannels	read-only	Unsigned32	The number of channels that are enabled.

Table 9. The dcpOchGeneralTable of DCP-OCH-MIB

4.4.2 dcpOchTable

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpOch(4).dcpOchObjects(2). dcpOchTable(1).

OID: 1.3.6.1.4.1.30826.2.2.4.2.1

The dcpOchTable contains information about the optical channels of the systems.

OID	Object	Access	Type	Value
1	dcpOchIndex	not-accessible	Unsigned32	A unique index for each interface.
2	dcpOchChannelId	read-only	DisplayString	The optical channel id name.
3	dcpOchRxPower	read-only	DcpTenths	The optical input power for the optical channel in units of 0.1 dBm.

4	dcpOchTxPower	read-only	DcpTenths	The optical output power for the optical channel in units of 0.1 dBm.
5	dcpOchWssAttenuation	read-only	DcpTenths	The WSS attenuation for the optical channel in units of 0.1 dB.
6	dcpOchWssInsertionLoss	read-only	DcpTenths	The calibration value of WSS insertion loss in units of 0.1 dBm.
7	dcpOchWantedOutputPower	read-only	DcpTenths	The wanted optical output power for the optical channel in units of 0.1 dBm.
8	dcpOchPortMode	read-only	OchPortMode	<p>The port mode for the channel. Port mode can be on or off.</p> <p>off - The channel is disabled.</p> <p>on - The channel is enabled.</p> <p>edfa - The channel is enabled and connected to the edfa port.</p> <p>express - The channel is enabled and connected to the express port.</p>
9	dcpOchStatus	read-only	InterfaceStatus	<p>The operational state for a channel.</p> <p>idle - The optical channel is not activated.</p> <p>down - The optical channel traffic is lost.</p> <p>up - There is traffic on the optical channel.</p>
10	dcpOchDescription	read-only	DisplayString	User configurable description string for the optical channel.
11	dcpOchAlarm	read-only	ItuPerceivedSeverity	The highest alarm severity of the optical channel.

Table 10. The dcpOchTable of DCP-OCH-MIB

4.5 DCP-TOPOLOGY-MIB

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpTopology (5)

OID: 1.3.6.1.4.1.30826.2.2.5

The dcpTopology keeps a list of the current topology internal in the system

OID	Object	Access	Type	Value
1.3.6.1.4.1.30826.2.2.5.1.1.1.1.1	dcpTopologyInternalId	not-accessible	Unsigned32	A unique index for each interface.
1.3.6.1.4.1.30826.2.2.5.1.1.1.2.1	dcpTopologyInternalSource	read-only	DisplayString	"Topology internal source."
1.3.6.1.4.1.30826.2.2.5.1.1.1.3.1	dcpTopologyInternalDestination	read-only	DisplayString	"Topology internal destination."

Table 11. The dcpTopologyInternalTable of DCP-TOPOLOGY-MIB

4.6 DCP-ENV-MON-MIB

Path: iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpEnvMon (6)

OID: 1.3.6.1.4.1.30826.2.2.6

The DCP-ENV-MON-MIB contains information about temperature, power and fan sensors in the system.

4.6.1 dcpEnvMonTemperatureTable

Path:
iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpEnvMon(6).dcpEnvMonObjects(1). dcpEnvMonTemperatureTable(1).

OID: 1.3.6.1.4.1.30826.2.2.6.1.1

The dcpEnvMonTemperatureTable contains information about the temperature sensors in the system.

OID	Object	Access	Type	Value
1.3.6.1.4.1.30826.2.2.6.1.1.1.1.1	dcpEnvMonTemperatureIndex	not-accessible	Unsigned32	A unique index for each temperature sensor.
1.3.6.1.4.1.30826.2.2.6.1.1.1.2.1	dcpEnvMonTemperatureDescription	read-only	DisplayString	"The name of the temperature sensor."
1.3.6.1.4.1.30826.2.2.6.1.1.1.3.1	dcpEnvMonTemperatureValue	read-only	DcpTenths	"The remperature measured by the sensor in units of 0.1 degree celsius."

Table 12. The dcpEnvMonTemperatureTable of DCP-ENV-MON-MIB

4.6.2 dcpEnvMonPowerConsumptionTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpEnvMon(6).dcpEnvMonObjects(1).dcEnvMonPowerConsumptionTable(2).

OID: 1.3.6.1.4.1.30826.2.2.6.1.2

The dcpEnvMonPowerConsumptionTable contains information about the measured power consumption in the system.

OID	Object	Access	Type	Value
1.3.6.1.4.1.30826.2.2.6.1.2.1.1.1	dcpEnvMonPowerConsumptionIndex	not-accessible	Unsigned32	A unique index for each power consumption sensor.
1.3.6.1.4.1.30826.2.2.6.1.2.1.2.1	dcpEnvMonPowerConsumptionDescription	read-only	DisplayString	"The name of the power consumption sensor."
1.3.6.1.4.1.30826.2.2.6.1.2.1.3.1	dcpEnvMonPowerConsumptionValue	read-only	Integer32	"The power consumption measured by the sensor in Watt."

Table 13. The dcpEnvMonPowerConsumptionTable of DCP-ENV-MON-MIB

4.6.3 dcpEnvMonFanTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpEnvMon(6).dcpEnvMonObjects(1).dcEnvMonFanTable(3).

OID: 1.3.6.1.4.1.30826.2.2.6.1.3

The dcpEnvMonFanTable contains information about the fan status in the system.

OID	Object	Access	Type	Value
1.3.6.1.4.1.30826.2.2.6.1.3.1.1.1	dcpEnvMonFanIndex	not-accessible	Unsigned32	A unique index for each fan sensor.
1.3.6.1.4.1.30826.2.2.6.1.3.1.2.1	dcpEnvMonFanDescription	read-only	DisplayString	"The name of the fan sensor"
1.3.6.1.4.1.30826.2.2.6.1.3.1.3.1	dcpEnvMonFanStatus	read-only	FanStatus	"The status of the fan. notPresent(1) ok(2) alarm(3)"
1.3.6.1.4.1.30826.2.2.6.1.3.1.4.1	dcpEnvMonFanMode	read-only	FanMode	The fan mode indicates in what fan speed mode the fan is in. na(1) high(2) medium(3) low(4)

1.3.6.1.4.1.30826.2.2.6.1.3.1.5.1	dcpEnvMonFanSpeed	read-only	FanSpeed	The fan speed in rpm.
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Table 14. The dcpEnvMonFanTable of DCP-ENV-MON-MIB

4.6.4 dcpEnvMonVoltageTable

Path:

iso(1).org(3).dod(6).internet(1).private(4).enterprise(1).smartoptics(30826).dcp(2).dcpGeneric(2).dcpEnvMon(6).dcpEnvMonObjects(1).dcpEnvMonVoltageTable (4).

OID: 1.3.6.1.4.1.30826.2.2.6.1.4

The dcpEnvMonVoltageTable contains information about the voltage status on the power supplies in the system.

OID	Object	Access	Type	Value
1.3.6.1.4.1.30826.2.2.6.1.4.1.1.1	dcpEnvMonVoltageIndex	not-accessible	Unsigned32	A unique index for each power supply.
1.3.6.1.4.1.30826.2.2.6.1.4.1.2.1	dcpEnvMonVoltageDescription	read-only	DisplayString	
1.3.6.1.4.1.30826.2.2.6.1.4.1.3.1	dcpEnvMonVoltageInputValue	read-only	DcpTenths	The input voltage to the power supply
1.3.6.1.4.1.30826.2.2.6.1.4.1.4.1	dcpEnvMonVoltageInputLowValue	read-only	DcpTenths	The lower limit for the input voltage on the power supply
1.3.6.1.4.1.30826.2.2.6.1.4.1.5.1	dcpEnvMonVoltageInputHighValue	read-only	DcpTenths	The upper limit for the input voltage on the power supply

Table 15. The dcpEnvMonVoltageTable of DCP-ENV-MON-MIB

5 Standard SNMP Traps

The DCP supports the following standard SNMPv2c traps.

Trap Name	Defined In	snmpTrapOID	Description
coldStart	rfc3418	1.3.6.1.6.3.1.1.5.1	A coldStart trap signifies that the SNMP agent has been restarted.

Table 16. Standard SNMP v2c traps.

6 DCP Enterprise specific SNMP traps

The DCP sends SNMP v2c traps (notifications) when an alarm is activated or deactivated in the system. The DCP supports the traps in the table “DCP Enterprise Traps” below.

The alarms in the system are sent as traps according to the severity level of the alarm.

Trap Name	Defined In	snmpTrapOID	Description
dcpAlarmNotificationCleared	DCP-ALARM-MIB	1.3.6.1.4.1.30826.2.2.2.3.0.1	A deactivated alarm.
dcpAlarmNotificationCritical	DCP-ALARM-MIB	1.3.6.1.4.1.30826.2.2.2.3.0.2	An alarm with severity Critical.
dcpAlarmNotificationMajor	DCP-ALARM-MIB	1.3.6.1.4.1.30826.2.2.2.3.0.3	An alarm with severity Major.
dcpAlarmNotificationMinor	DCP-ALARM-MIB	1.3.6.1.4.1.30826.2.2.2.3.0.4	An alarm with severity Minor.
dcpAlarmNotificationWarning	DCP-ALARM-MIB	1.3.6.1.4.1.30826.2.2.2.3.0.5	An alarm with severity Warning.

Table 17. DCP Enterprise Traps.

The SNMPv2c trap is defined as NOTIFICATION and formatted like this:

- sysUpTime –The time (in hundreds of a second) since the network management portion of the system was last re-initialized.
- snmpTrapOID – Trap identity of the notification currently being sent.
- VarBindList – This is a list of the variable bindings in the table “The DCP enterprise trap components” below.

Trap Name	OID	Type	Description
dcpAlarmLogListIndex	1.3.6.1.4.1.30826.2.2.2.2.2.1.1	Unsigned32	A unique index assigned to each alarm.
dcpAlarmLogListLocation	1.3.6.1.4.1.30826.2.2.2.2.2.1.2	DisplayString	The location from where the alarm originated. chassis, slot 1, slot 2, psu-1/1, psu-1/2 or fan-1/1.
dcpAlarmLogListInterfaceName	1.3.6.1.4.1.30826.2.2.2.2.2.1.3	DisplayString	The interface name from where the alarm originated. If not an interface this value will be empty.
dcpAlarmLogListText	1.3.6.1.4.1.30826.2.2.2.2.2.1.4	DisplayString	The alarm text for the alarm.
dcpAlarmLogListSeverity	1.3.6.1.4.1.30826.2.2.2.2.2.1.5	ItuPerceivedSeverity	The severity of the alarm as defined in ITU-T X.733. cleared (1), indeterminate (2), critical (3), major (4), minor (5), warning (6)
dcpAlarmLogListStartTime	1.3.6.1.4.1.30826.2.2.2.2.2.1.6	DateAndTime	The time when the alarm was activated. The time is in Coordinated Universal Time (UTC).
dcpAlarmLogListEndTime	1.3.6.1.4.1.30826.2.2.2.2.2.1.7	DateAndTime	The time when the alarm was deactivated. The time is in Coordinated Universal Time (UTC).
dcpAlarmLogListSeqNumber	1.3.6.1.4.1.30826.2.2.2.2.2.1.8	Unsigned32	The sequence number when the Enterprise trap was sent.
dcpAlarmLogListInterfaceDescription	1.3.6.1.4.1.30826.2.2.2.2.2.1.9	DisplayString	The interface description field from where the alarm originated.

Table 18. The DCP enterprise trap components.

7 Loading MIB Files to a Network Management System

The different MIB files must be loaded into the Network Management System in a specific order for the system to interpret the MIB Objects correctly.

The DCP MIB package 2 folders: Standard and Enterprise. The Standard folder contains the standard MIBs supported by the DCP. The Enterprise folder contains the DCP Enterprise MIBS.

Using a MIB compiler, load the Standard MIBs into the Network Management System.

1. Extract the DCP_MIB.zip file.
2. Load the Standard MIB files from the Standard folder into the Network Management System. They need to be loaded in the correct order.
Many NMS have already some of the standard MIBs loaded. If this is the case, skip this MIB and go on to the next MIB in the list.
 - a. SNMPv2-TC
 - b. SNMPv2-SMI
 - c. SNMPv2-MIB
 - d. SNMPv2-CONF
 - e. IANAifTYPE-MIB
 - f. IF-MIB
 - g. ENTITY-MIB
3. Load the DCP Enterprise MIBS from the Enterprise folder into the NMS. These MIBs also needs to be loaded in the correct order.
 - a. SO-MIB
 - b. SO-TC-MIB
 - c. DCP-MIB
 - d. DCP-INTERFACE-MIB
 - e. DCP-ALARM-MIB
 - f. DCP-LINKVIEW-MIB
 - g. DCP-OCH-MIB
 - h. DCP-TOPOLOGY-MIB
 - i. DCP-ENV-MON-MIB