



# ZXOS11NPI

## XGSPON STICK **Product Guide** Rev 2.1

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Issued by Zaram Technology, Inc.

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**Notice :** Please use the product safely and correctly in accordance with the contents of the Product & Installation Guide, and disassembling this product may cause malfunction, and static electricity, and will not be responsible for personal or property damage.

**History**

Version	Created Date	Changes
Rev 0.1	2020-10-22	Release date of the initial Document
Rev 0.5	2020-11-03	Added MTBF, Installation guide
Rev 0.6	2020-11-06	Safety Labels, FCC info. added
Rev 0.7	2020-11-13	Revised the title of the document Revised the power consumption information Added MTBF at 25°C Added the ESD caution marking and statement Revised the Installtion/Removal Instruction Revised the trouble shooting
Rev 0.8	2020-12-04	Added model 3FE49207AA
Rev 0.9	2020-12-10	Added EEPROM data, Revised the Safety Labels & Regulatory Compliance. Revised the Hardware Features Added Troubleshooting Added CLI
Rev 1.0	2020-12-21	Revised EEPROMM A2 Tx High Alaram & Warnig Updated Compliance Information
Rev 1.1	2020-12-30	Revised Safety labels – FCC Notice added Revised EEPROMM A2 Tx High Alaram & Warnig
Rev 1.2	2021-06-08	Change 1PPS Timing Modify telnet/SSH
Rev 1.3	2021-06-17	Add switch<->gemport drop check CLI Packet filter/counter CLI
Rev 1.4	2021-08-17	Modify CLI text
Rev 1.5	2021-11-03	Added UKCA marking Change EEPROM's default value (address 64,65)
Rev 1.6	2021-11-23	Modify RX_LOS description
Rev 1.7	2021-12-21	Add key info CLI Modify CLI text
Rev 1.8	2022-02-18	Modify Software Features Add Remote Debug by OMCI
Rev 1.9	2022-05-09	Support Soft TX Disable Add Remote Debug CLI(capture and reboot) Modify CLI text
Rev 2.0	2022-07-29	Modify RX LOS description
Rev 2.1	2022-11-21	Modify Software Features
Rev 2.2	2023-01-27	Change the value of the TX Power High Warning threshold Add test rogue-onu CLI



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# 1. Introduction



## 1.1. Overview

This document is intended to guide network operators and related engineers, and focuses on the XGSPON-STICK specification.

## 1.2. Document Notation

The following <Table 1> explains icons used in this guide.

**Table 1. Information and Warning**

Icon	type	Description
	<b>Warning Attention</b>	Risk of injury to persons, loss of data, or system damage.
	<b>Information</b>	Important functions or features, commands, tips.



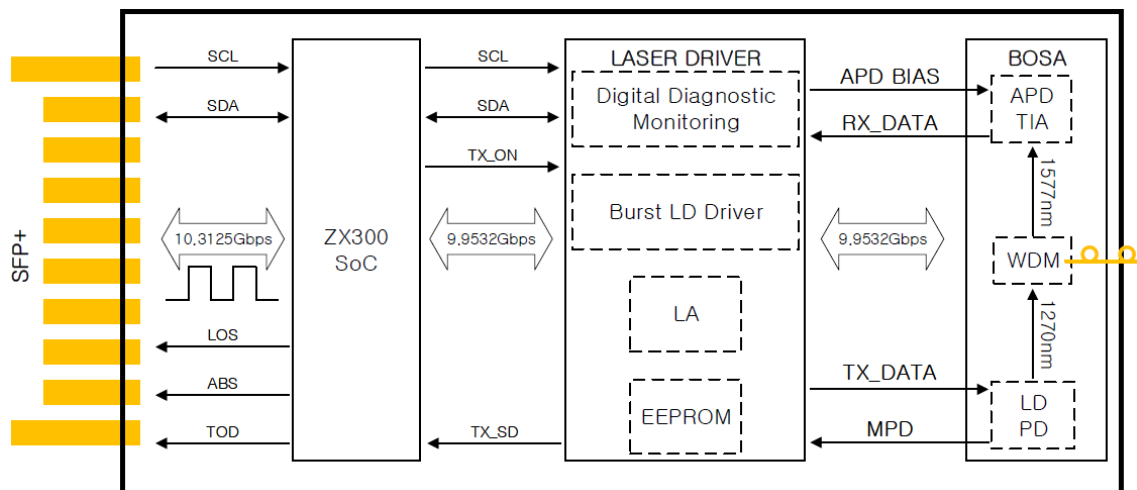
# 2. Product Specifications

## 2.1. Description

ZARAM XGSPON-STICK is “Embedded XGSPON-MAC Optical Network Terminal (ONT)” with Small Form-factor Pluggable (SFP+) packaging.

The XGSPON-STICK provides a pluggable XGSPON interface for “Mobile backhaul application” and “FTTx connection over existing L2 Ethernet switch”. This is also providing symmetric/asymmetric PON-MAC protocols, which is including a sophisticated ONT management system such as alarms and provisioning.

The 10GPON MAC fits into existing communications equipments, providing service providers with a smoothly upgrading the network infra to 10GPON.



[Figure 2-1] XGSPON-STICK Block Diagram.

## 2.2. Hardware Features

- Simplex SC/UPC Connector, Integrated Diplexer Transceiver
- Compliant with ITU-T G.9807.1 XGS-PON (N1/N2)
- Support 10Gbps bi-directional traffic capability.
- 1270nm Burst-Mode Transmitter with DFB Laser
- 1577nm Continuous-Mode Receiver with APD-TIA
- Compliant with SFF-8431/SFF-8472/GR-468
- Single 3.3V Power Supply
- Commercial and Industrial Temperature Available
- Low Power consumption: Typical < 2W Worst Case (85°C) <2.1W
- Designed to interoperate with 3<sup>rd</sup> party L2/L3 switch with SFP+ type uplink port

## 2.3. Software Features

- Compliant with ITU-T G.988 GPON OMCI
- Support SSH/Telnet for Management
- Support 8K MAC entries
- Support multicast IGMP snooping
- Support advanced data features including VLAN-translation, modification and transparency
- Compliance with IEEE 1588v2 8275.1 boundary clock, Support G.8273.2 ClassB performance of pair of media converters
- Support ToD / 1PPS (software option1)
- Support "Plug-and-play" configuration via OLT
- Support Dying Gasp notification (software option1)
- Support Rogue ONU Detecting
- Wire-speed with minimum frame-size
- Support Jumbo frames up to 9K
- Support AES (DS/US Unicast, DS/US OMCI, DS Multicast) (comment 1,2)
- Support 8TCONT / 64GEM + 2GEM(Broadcast /Multicast)

Software option1) ToD / 1PPS / Dying Gasp function disabled by software.

If you want to use the ToD or 1PPS or Dying Gasp function, please further contact with related PLM (comment 1) Originally, US OMCI AES works the same as enable/disable of DS OMCI AES, but it operates the same as US Unicast AES setting due to HW limitation.

To enable US OMCI AES, enable US Unicast AES.

(comment 2) DS Muticast AES is not tested.

## 2.4. Product Information

PART NUMBER	VOLTAGE	TEMPERATURE	WAVELENGTH	UPLINK INTERFACE	SERVICE INTERFACE
ZXOS11NPI	3.3V	-40 °C ~ +85°C	1577 DOWN STREAM, 1270 UP STREAM	10GPON port (SC/UPC)	SFP+ XFI interface

## 2.5. Hardware Information

Main Chip	ZARAM SoC (ZX300)
Flash Memory	Embedded 128Mbit

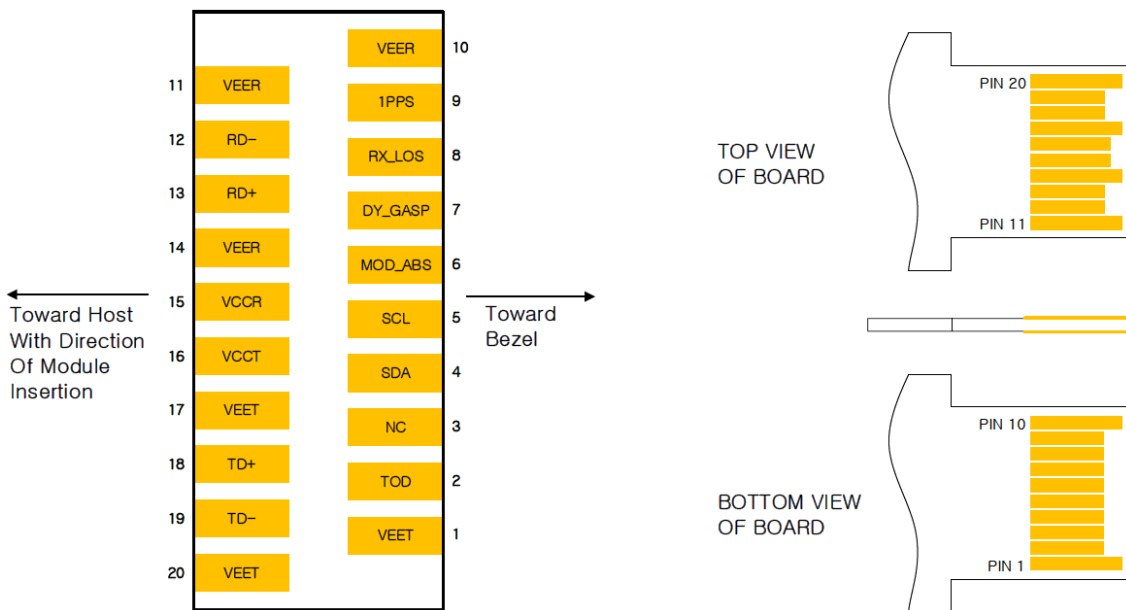
## **XGSPON-STICK**

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Memory	Embedded 512Mbit, LPDDR SDRAM
Wavelength	1577nm Downstream, 1270nm Upstream
Uplink Interface	10 GPON Port (SC/UPC, SFP Compliant interface)
Service Interface	SFP+ Compatible SERDES Interface

# 3. Interface Connector

## 3.1. Pin Map



[Figure 3-1] XGSPON-STICK PIN MAP Diagram.

## 3.2. Pin Assignment

No.	Symbol	Level / Logic	Description	Note
1	VeeT	NA	Module Transmitter Ground	

## XGSPON-STICK

2	ToD	LVTTL-O	Time of day	1
3	NC	LVTTL-I		4
4	SDA	LVTTL-IO	2-Wire Serial Interface Data Line	2
5	SCL	LVTTL-I	2-Wire Serial Interface Clock	2
6	MOD_ABS	LVTTL-O	Module Absent, Set to low	3
7	Dying_Gasp	LVTTL-I	Default : not used / Dying Gasp Function(Software option)	
8	RX_LOS	LVTTL-O	Loss of Receiver Signal Indication	3
9	1PPS	LVTTL-O	1 Pulse Per Second	
10	VeeR	NA	Module Receiver Ground	
11	VeeR	NA	Module Receiver Ground	
12	RD-	CML-O	Receiver Inverted Data Output	
13	RD+	CML-O	Receiver Non-Inverted Data Output	
14	VeeR	NA	Module Receiver Ground	
15	VccR	NA	Module Receiver 3.3V Supply	
16	VccT	NA	Module Transmitter 3.3V Supply	
17	VeeT	NA	Module Transmitter Ground	
18	TD+	CML-I	Transmitter Non-Inverted Data Input	
19	TD-	CML-I	Transmitter Inverted Data Input	
20	VeeT	NA	Module Transmitter Ground	

Note:

1. Output from the MCU\_UART\_TX port.
2. 10K pull-up is applied inside the XGSPON stick.
3. It needs to be pulled up with 4.7K-10K ohms to a Host\_Vcc on the host board.
4. NC PIN (It needs to be pulled up or down, or NC on the host board.)

Software option) ToD / 1PPS / Dying Gasp function disabled by software.

If the ToD or 1PPS or Dying Gasp function is required, you need to upgrade software with the function enabled

## 3.3. Pin Description

### 3.3.1. VccT/VccR (Power Supply)

Refer to the table below for the Input Voltage requirement

Pin no.	Pin name	Specification	Min	Typical	Max	Units
16	VccT		3.15	3.3	3.45	V

## XGSPON-STICK

15	VccR	Normal Operating Voltage				
1,17,20	VeeT	GND		0		
10,11,14	VeeR					

Note: The Operatin Voltage Range must never be exceeded.

### 3.3.2. ToD (Time of Day)

The product processes timing information received from OLT and outputs timing information through this pin.

Output is from the MCU\_UART\_TX port.

Pin no.	Pin name	Pin Description	Direction
2	ToD	timing information data Baudrate : 38400	Output

output data example :

```
$GPZDA,084414.00,20,10,2020,00,00*68  
$GPZDA,084415.00,20,10,2020,00,00*69
```

```
$GPZDA, HHMMSS .00 ,DD ,MM ,YYYY , 00 ,00 *checksum
```

### 3.3.3. SDA/SCL (I2C Slave Interface)

The pin is for 2-wire serial interface communication.

This is for the host to check the DDM(Digital Diagnostc Monitoring) information of the XGSPON STICK.

Pin no.	Pin name	Pin Description	Direction
4	SDA	I2C Serial Data	Bi-direction
5	SCL	I2C Serial CLK	input

Note: 1. 10K pull-up is applied inside the xgspn stick.  
2. I2C Slave Address : A0/A2

### 3.3.4. MOD\_ABS

The pin is for the host to confirm the XGSPON STICK presence.  
It is set to low.

Pin no.	Pin name	Pin Description	Direction
---------	----------	-----------------	-----------

## XGSPON-STICK

6	MOD_ABS	Control from MCU GPIO pin. Set to low	Output
---	---------	--	--------

### 3.3.5. Dying\_Gasp

The pin is not default but optional which can be used as Dying\_Gasp function by software setting. If input level is 0, it will report Dying\_Gasp information to OLT when the function is activated.

Pin no.	Pin name	Pin Description	Direction
7	Dying_Gasp	Input signal from HOST. low active	Input

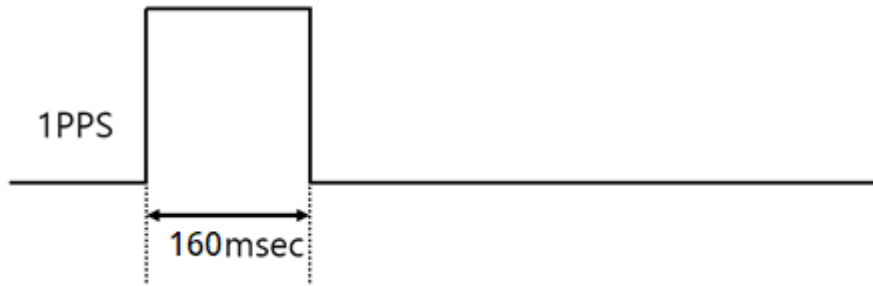
### 3.3.6. RX\_LOS

The pin is Loss of Signal output pin.

Pin no.	Pin name	Pin Description	Direction
8	RX_LOS	Control from MCU GPIO pin. When LOS, Set to high.  NOTE: LOS pin control is applied from V089.02 version. Versions prior to V089.02 always keep low.	Output

### 3.3.7. 1PPS

This pin is output 1PPS.



Pin no.	Pin name	Pin Description	Direction
9	1PPS	Output 1PPS signal	Output

### 3.3.8. RD+/- (DIFFERENTIAL ETH TX DATA)

The pin is 10Gbps Ethernet differential TXD output interface.

Pin no.	Pin name	Pin Description	Direction
12	RD-	10Gbps Ethernet interface TXD- TRANSMITTER_DATA_N to HOST 10.3125 Gbps SERDES	output
13	RD+	10Gbps Ethernet interface TXD+ TRANSMITTER_DATA_P to HOST 10.3125 Gbps SERDES	output

### 3.3.9. TD+/- (DIFFERENTIAL ETH RX DATA)

The pin is 10Gbps Ethernet differential RXD input interface.

Pin no.	Pin name	Pin Description	Direction
18	TD+	10Gbps Ethernet interface RXD+ RECEIVER_DATA_P from HOST 10.3125 Gbps SERDES	input
19	TD-	10Gbps Ethernet interface RXD- RECEIVER_DATA_N from HOST 10.3125 Gbps SERDES	input



# 4. Hardware Specification

## 4.1. Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	$T_S$	-40	+85	°C	
Storage Humidity	$H_S$	5	85	%	
Power Supply Voltage	$V_{CCR}/V_{CC T}$		+3.6	V	

## 4.2. Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT S	NOTE
Operating Case Temperature	$T_C$	-40		+85	°C	Industrial
	$T_C$	0		+70	°C	Commercial
Total Tx and Rx Supply Current	$I_{CC}$			600	mA	
Supply Voltage	$V_{CC T}/V_{CC R}$	3.15	3.3	3.45	V	
Power Consumption				2.0	W	
Transmission Distance	TD			20	Km	
Bit Rate for Tx 1270nm			9.9532		Gbps	
Bit Rate for Rx 1577nm			9.9532		Gbps	

### 4.3. Transmitter Optical Characteristics

PARAMETER	MIN	TYP	MAX	UNITS	NOTE
Data Rate		9.9532		Gb/s	
Center Wavelength	1260	1270	1280	nm	
Spectral Width (-20dB)			1	nm	
Side Mode Suppression Ratio(SMSR)	30			dB	
Average Output Power (AOP)	+4		+9	dBm	
Burst enable is off power (Poff)			-45	dBm	
Extinction Ratio	6			dB	1
Transmitter Mask (PRBS 2 <sup>31</sup> -1@9.9532G)	Compliant With ITU-T G9807.1				1

Note 1. Measured with a PRBS 2<sup>31</sup>-1 Test Pattern @9.9532Gbps

### 4.4. Receiver Optical Characteristics

PARAMETER	MIN	TYP	MAX	UNITS	NOTE
Data Rate		9.9532		Gb/s	
Center Wavelength	1575	1577	1580	nm	
Sensitivity (PRBS 2 <sup>31</sup> -1@9.9532G, ER 8.2 TX)			-28.5	dBm	1
Overload (PRBS 2 <sup>31</sup> -1@9.9532G, ER 8.2 TX)	-9			dBm	1
Loss of signal assert Level	-39			dBm	
Loss of signal De-assert Level			-29	dBm	
Isolation (1550~1560nm) into 1577nm RX	35			dB	
Isolation (1490~1500nm GPON) into 1577nm RX	25			dB	
Isolation (1260~1330nm XGS-PON) into 1577nm RX	31			dB	
Isolation (1524~1544nm NGPON2) into 1577nm RX	27				
Isolation (1596~1603nm NGPON2) into 1577nm RX	31				
Isolation (1603~1625nm PtP) into 1577nm RX	35				
Isolation (1625~1650nm) into 1577nm RX	35				
Isolation (Internal 1260~1280nm Tx) into 1577nm RX	35				

## XGSPON-STICK

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Note 1. Measured with a PRBS 2<sup>31</sup>-1 Test Pattern @9.9532Gbps and ER=6dB, BER ≤1.0E-3

### 4.5. Transmitter Electrical Interface Characteristics

PARAMETER	MIN	TYP	MAX	UNITS	NOTE
Data Rate		10.3125		Gbps	
Data Input Swing Differential	190		1000	mVpp	
Date Differential Impedance	80	100	120	Ω	
Transmitter Disable Voltage - Low	0		0.8	V	
Transmitter Disable Voltage - High	2.0		Vcc	V	
Power Down Voltage Low	0		0.8	V	
Power Down Voltage High	2.0		Vcc	V	
TX Fault Assert Time	-		50	ms	
TX Fault Reset Time	10		-	μs	
Burst Turn On Time			51.2	ns	
Burst Turn Off Time			51.2	ns	
TX Power Down Assert Time			512	ns	1
TX Power Down De-assert Time			512	ns	2

Notes:

1. Measured to 10% of final supply current
2. Measured to 90% of final supply current

### 4.6. Receiver Electrical Interface Characteristics

PARAMETER	MIN	TYP	MAX	UNITS	NOTE
Data Rate		10.3125		Gbps	
Data Output Differential Swing	300		850	mVpp	
Loss of Signal (LOS)Assert Time			100	μs	
Loss of Signal (LOS) De-assert Time			100	μs	
Output Differential Impedance	80	100	120	Ω	

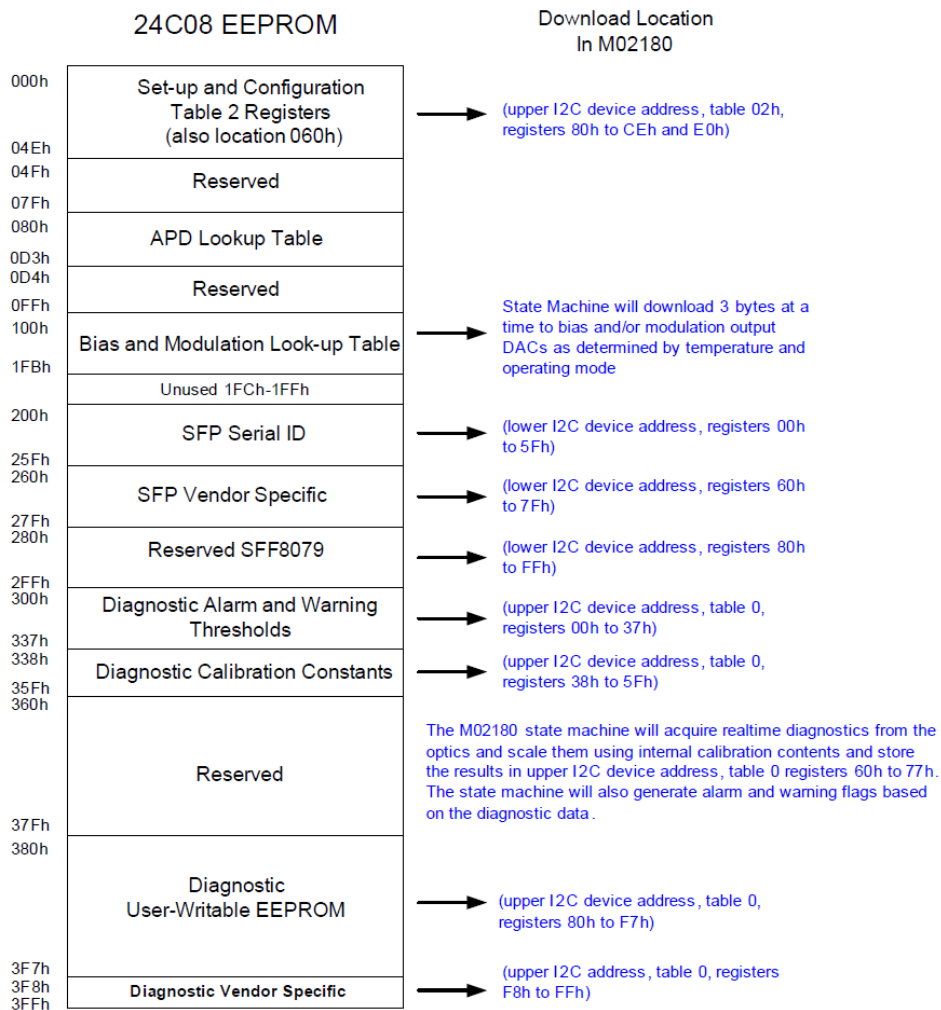
# 5. Power Consumption

## 5.1. Operating Power Consumption

MODE	Voltage (V)	Current (A)	Power (W)	Condition
Tx/Rx Traffic Status	3.3 V	$\leq 0.606$ A	$\leq 2.00$ W	OLT Connection Spirent Test Center Traffic Tester N6705B Power Analyzer Room Temperature

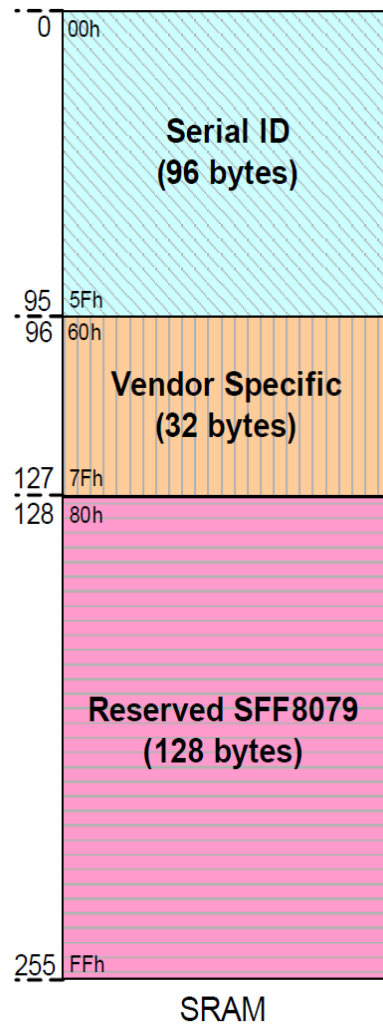
# 6. EEPROM Memory MAP

## 6.1. 24C08 EEPROM MAP



The default lower I2C device address is 9Ch. It may be reprogrammed to A 0h or other values.  
The default upper I2C device address is 9Eh. It is always equal to the lower I2C device address +2.

## 6.2. Register : A0 Address



**XGSPON-STICK**

decimal	hex	size	Name	value	description
Serial ID (BASE ID FIELDS)					
0	00h	1	Identifier	03	SFP or SFP+
1	01h	1	Ext. Identifier	04	GBIC/SFP function is defined by two-wire interface ID only
2	02h	1	Connector	01	SC/UPC (Subscriber Connector)
3	03h	1	Transceiver	20	10G Ethernet Compliance Codes (10GBASE-LR)
4	04h	1		--	-
5~10	05h 0Ah	~ 6		--	-
11	0Bh	1	Encoding	06	64B/66B (Fiber Channel 16G/8G/4G or Ethernet 10G/1G)
12	0Ch	1	BR, Nominal	67 63	103 * 100Mbps = 10300Mbps = 10.3Gbps 99 * 100Mbps = 9900Mbps = 9.9Gbps
13	0Dh	1	Rate Identifier	--	-
14	0Eh	1	Length (SMF, km)	14	20 * 1km = 20km
15	0Fh	1		C8	C8h(200) * 100m = 20000m = 20km
16	10h	1		--	OM2(500MHz*km at 850nm)
17	11h	1		--	OM1(200MHz*km at 850nm, 500MHz*km at 1310nm) / 10m
18	12h	1		--	OM4(4700MHz*km) / 10m
19	13h	1	--	OM3(2000MHz*km) / 10m	
20~35	14h~23h	16	Vendor name	5a-72-61-6d-20-20-20-20-20-20-20-20-20-20-20-20	Zaram (ASCII)
36	24h	1	Transceiver	--	-
37~39	25h~27h	3	Vendor OUI	00-0b-6f	ZARAM OUI "00-0b-6F"
40~55	28h~37h	16	Vendor PN	5a-58-4f-53-31-31-4e-50-49-20-20-20-20	ZXOS11NI (ASCII)
56~59	38h~3Bh	4	Vendor rev	31-42-20-20	1B□□ (ASCII)
60~61	3Ch~3Dh	2	Wave-length	04-f6	TX 1270nm (08h 3,4bit= 0)
62	3Eh	1	Unallocated	--	
63	3Fh	1	CC_BASE	-	Check code (0~62)

decimal	hex	size	name	value	description
Serial ID (EXTENDED ID FIELDS)					
64~65	40h~41h	2	Option Values	22-02	Power Level[3], RX_LOS(PIN.8) support, TX_FAULT(PIN.2) and TX_DISABLE(PIN.3) not support
66	42h	1	BR, max	--	Upper bit rate margin (see details for rates > 25.0Gbps)

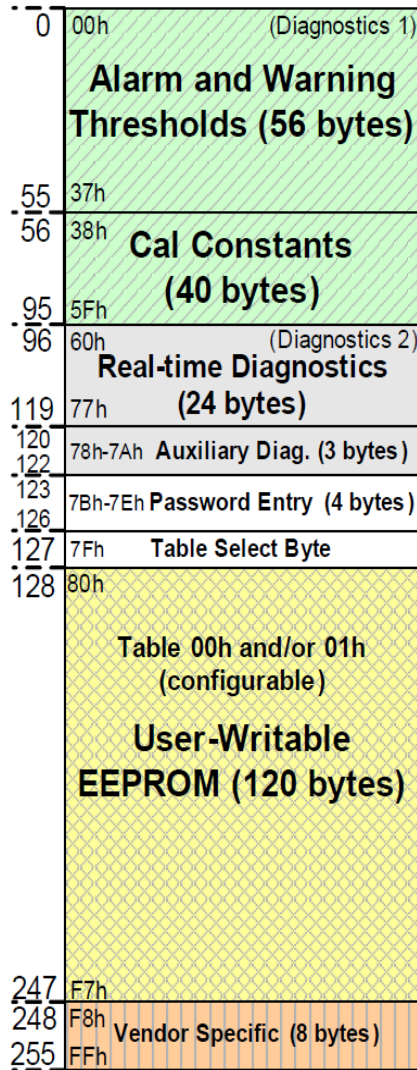
**XGSPON-STICK**

67	43h	1	BR, min	--	Lower bit rate margin (see details for rates > 25.0Gbps)
68~83	44h~53h	16	Vendor SN (note1)	5a-61-72-6d-43-4e-32-30-33-38-30-36-31-37-20-20	ZarmCN20380617□□ (ASCII) / Variable ZarmCUYYWWnum□□
84~91	54h~5Bh	8	Date Code (note1)	32-30-30-39-31-34-20-20	200914□□ (ASCII / YYMMDDL) LC: lot_code / Variable
92	5Ch	1	Diagnostic type	68	Diagnostic monitoring implemented & Internally calibrated, Average power monitoring
93	5Dh	1	Enhanced Options	f0	Optional enhanced features Alarm/warning flags implemented TX_DISABLE control and monitoring implemented TX_FAULT, RX_LOS monitoring implemented
94	5Eh	1	SFF-8472 Compliance	03	Includes functionality described in Rev 10.2 of SFF-8472.
95	5Fh	1	CC_EXT	-	Check Code (64 ~ 94) / Variable
Vendor Specific					
96~103	60h~67h	8	Vendor Specific		TBD
104~113	68h~71h	10	Vendor Specific		TBD
114~115	72h~73h	2	Vendor Specific		TBD
116	74h	1	Vendor Specific		TBD
117~126	75h~7Eh	10	Vendor Specific		TBD
127	7Fh	1	Vendor Specific		TBD
Reserved SFF-8079					
128~255	80h~FFh	128	Reserved		SFP Rate and Application Selection

Note 1. Vendor SN, Date Code has a different value for each product



### 6.3. Register : A2 Address



SRAM

**XGSPON-STICK**

decimal	hex	size	name	value			Description
Alarm and Warning Thresholds (56-Byte)							
0~1	00~01h	2	Temp. High alarm	5a-00	90	°C	M02180 die temperature 16bit signed 2's (-128 ~ 128 [°C]) decimal / 256
2~3	02~03h	2	Temp. Low alarm	d3-00	-45	°C	
4~5	04~05h	2	Temp. High Warning	55-00	85	°C	
6~7	06~07h	2	Temp. Low Warning	d8-00	-40	°C	
8~9	08~09h	2	Voltage. High alarm	9c-40	4.0	V	VCCR 16bit unsigned (0~6.55 [V]) decimal * 0.0001
10~11	0A~0Bh	2	Voltage. Low alarm	75-30	3.0	V	
12~13	0C~0Dh	2	Voltage. High Warning	88-b8	3.5	V	
14~15	0E~0Fh	2	Voltage. Low Warning	79-18	3.1	V	
16~17	10~11h	2	Bias. High alarm	af-c8	90	mA	Bias current 16bit unsigned (0~131 [mA]) decimal * 0.002
18~19	12~13h	2	Bias. Low alarm	03-e8	2	mA	
20~21	14~15h	2	Bias. High Warning	9c-40	80	mA	
22~23	16~17h	2	Bias. Low Warning	07-d0	4	mA	
24~25	18~19h	2	TX Power. High alarm	FF-FF	8.2	dBm	TX, RX Optical Power 16bit unsigned (0~6.5535 [mW]) -40 ~ +9 [dBm] decimal * 0.0001 65,535 * 0.0001 = 6.5535 [mW] ////////// dBm /////////// 10 * log(decimal * 0.0001) 10 * log(65,535 * 0.0001) = 8.16 [dBm]
26~27	1A~1Bh	2	TX Power. Low alarm	53-84	3.3	dBm	
28~29	1C~1Dh	2	TX Power. High Warning	FF-FF	8	dBm	
30~31	1E~1Fh	2	TX Power. Low Warning	5b-92	3.7	dBm	
32~33	20~21h	2	RX Power. High alarm	07-cb	-7	dBm	
34~35	22~23h	2	RX Power. Low alarm	00-06	32.2	dBm	
36~37	24~25h	2	RX Power. High Warning	06-f2	-7.5	dBm	
38~39	26~27h	2	RX Power. Low Warning	00-08	30.9	dBm	

## 6.4. DDM(Digital Diagnostics Monitoring) Indication

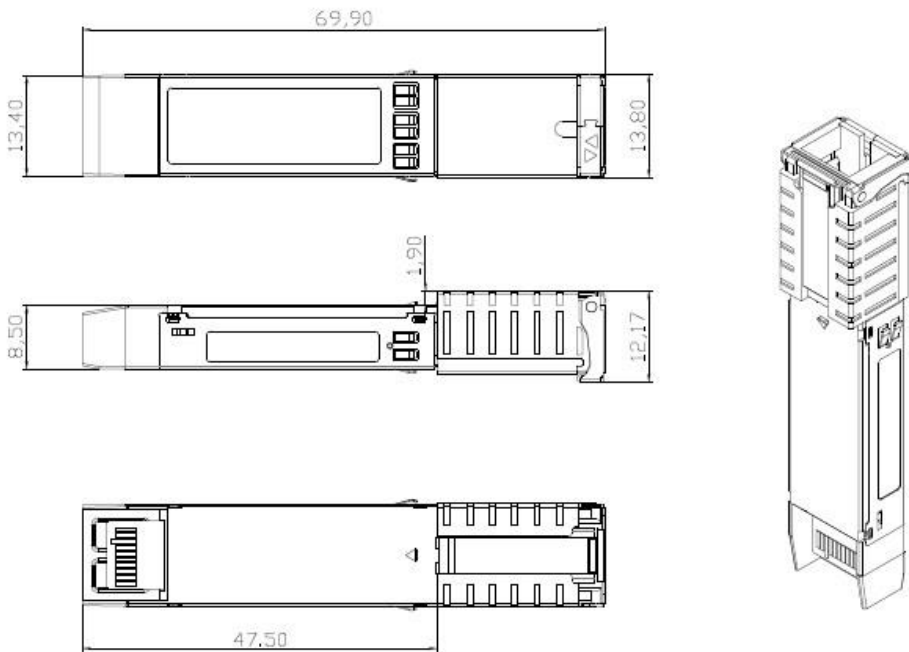
decimal	hex	size	name	value			description
Real-time Diagnostics (24-Byte)							
96~97	60~61h	2	Temperature	29 80	41.5	°C	decimal / 256 [°C] / Real-Time-Variable
98~99	62~63h	2	Vcc(VCCR)	82 a4	3.34	V	decimal * 0.0001 [V] / Real-Time-Variable
100~101	64~65h	2	TX Bias	12 d0	9.632	mA	decimal * 0.002 [mA] / Real-Time-Variable
102~103	66~67h	2	TX Power	7e 68	5.1	dBm	10 * log(decimal*0.0001) [dBm] / Real-Time-Variable
104~105	68~69h	2	Rx Power	00 7f	-18.9	dBm	10 * log(decimal*0.0001) [dBm] / Real-Time-Variable
106~107	6A~6Bh	2	Optional Laser Temp VCCTO	7f a0	3.27	V	SFF-8472, M02180: VCCTO / Real-Time-Variable
108~109	6C~6Dh	2	Optional TEC current auxiliary	01 d4	0.936	mA	/ Real-Time-Variable
110	6E	1	Optional Status/Control Bits	-	-	-	Soft TX Disable Select(6B)

Note : Real-time Diagnostics value changes every second in real time

# 7. Mechanical Specification

## 7.1. Product Dimension

Measurement Unit : mm



[Figure 7-1] XGSPON-STICK Mechanical Diagram.

# 8. Qualifications


## 8.1. Regulatory Compliance

Feature	Item	Description
CE / UKCA	Certification/mark	EN55032, EN55035, IEC62368-1, EN50581-2012
NRTL(MET)	Certification/mark	UL 62368-1, 3 <sup>rd</sup> Ed, Issued: 2019-12-13, CAN/CSA C22.2 No. 62368-1:19
Safety	MET, CB	IEC60825-1,IEC 62368-1, UL 62368-1
EMC	EMI	FCC part 15 class B
		EN 300 386
		EN 55032:2015
	EMS	EN 55035:2017
	ESD to the electronic Pins	MIL-STD-883J Method 3015.9
Laser Eye Safety	Laser Eye Safety	Comply with IEC 60825-1 Class 1
	FDA 21CFR1040.10 laser safety	CDRH report
Reliability	Reliability /DVT	GR-468
	MTBF and FIT	Telcordia SR-332 method-4
RoHS&WEEE	RoHS 10	2011/65/EU(6) and 2015/863/EU(10), EN50581-2012

## 8.2. Safety labels

Description	Label text
NRTL_MET compliance	Communication service equipment US listed. Complies with UL 62368-1, CSA C22.2 No. 62368-1

## XGSPON-STICK

	 Complies with UL 62368-1 CSA C22.2 No. 62368-1
ESD warning	Caution: This assembly contains electrostatic sensitive device.
Laser classification	Class 1 laser product
Laser product compliance	This laser product conforms to all applicable standards of 21 CFR 1040.10 at date of manufacture.
FCC standards compliance	Tested to comply with FCC standards for home or office use. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
CDRH compliance	Complies with 21 CFR 1040.10
CE marking	There are various CE symbols for CE compliance.
UKCA marking	Complies with UKCA requirements



### FCC Notice.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# 9. MTBF

## 9.1. Summary

This Reliability Failure Rate Prediction is based on the Bell core TR-332, 90% confidence level report is for the following P/Ns:

Table 1: P/N List

Part Number	Description
ZXOS11NPI	XGSPON ONU Stick, 20km, Tx 1270nm 9.953G, Rx 1577nm 9.953G,TX_Burst signal low active transmitter on, SFP+ form-factor, SC/UPC receptacle connector

All P/Ns are shared the same PCBA, Mechanics, OSA design, so only the LTI-SFP+LR is picked out for the reliability test.

## 9.2. Detail Prediction

The following MTBF Prediction is based on Bellcore TR-332. The calculation was made on the transceiver 85°C and 25°C temperature of 90% confidence level. Remark: Prediction data from our suppliers or Bellcore TR-332.

PART DESCRIPTION	QTY.	FAILURE_RATE @ 25°C	FAILURE_RATE @ 85°C
CAP, CERAMIC, NPO CC	28	2.60	12.24
RESISTOR, FIXED FILM RNR	45	1.60	13.56
FERRITE BEAD/INDUCTANCE	12	4.60	8.90
ZX300	1	18.90	156.50
Regulator	2	14.50	180.90
PLL IC	1	8.70	80.50
LASER DRIVER	1	8.90	92.30
TIA	1	45.50	202.40
OSA	1	84.00	294.00
	TOTAL	189.30	1041.3

**Failure Rate =997.30F.I.T.@+85°C With 90% Confidence Level.**

MTBF = (1 / FAILURE\_RATE) x 10<sup>9</sup> HOURS = 10<sup>9</sup> /1041.30 = 960,338 Hours

The unit of FAILURE\_RATE is PER BILLION HOURS.

**MTBF = 960,338 hours @+85°C With 90% Confidence Level.**

**Failure Rate 189.30F.I.T.@+25°C With 90% Confidence Level.**

MTBF = (1 / FAILURE\_RATE) x 10<sup>9</sup> HOURS = 10<sup>9</sup> /189.30 = 5,282,620 Hours

The unit of FAILURE\_RATE is PER BILLION HOURS.

**MTBF =5,282,620hours @+25°C With 90% Confidence Level.**

**According to the prediction data above, the Activation Energy was 0.36eV (i.e. Ea=0.36eV)**

**The Expected MTBF with various environment conditions**

(assume that the environmental factor =2.0, Grounded, Fixed and Uncontrolled)

Conditions	MTBF(Hours)
20 centigrade, 60% confidence level:	13,610,516
20 centigrade, 90% confidence level:	6,214,847
40 centigrade, 60% confidence level:	9,888,357
40 centigrade, 90% confidence level:	3,987,241
60 centigrade, 60% confidence level:	5,045,080
60 centigrade, 90% confidence level:	2,034,307



# 10. Installation / Removal Instruction



Protect the XGSPON STICK by inserting clean dust covers into them after the cables are removed.

Be sure to clean the optic surfaces of the fiber cables before you plug them back into the optical ports of another XGSPON STICK.

Avoid getting dust and other contaminants into the optical ports of your XGSPON STICK, because the optics will not work correctly when obstructed with dust.



It is strongly recommended that you do not install or remove the XGSPON STICK with fiber-optic cables attached to it because of the potential of damaging the cable, the cable connector, or the optical interfaces in the XGSPON STICK.

Disconnect all cables before removing or installing an XGSPON STICK.

Removing and inserting an XGSPON STICK can shorten its useful life, so You should not remove and insert XGSPON STICKs any more often than is absolutely necessary.



The product is an electrostatic sensitive device which requires extreme care when handling, storage, deployment and any other occasions.

## 10.1. Electrostatics Discharge Sensitivity (ESD) and cleanliness

10.1.1 An ESD-preventive wrist or ankle strap must be worn all the time while handling the product.

10.1.2 Do not touch the electrical connect which is extremely ESD sensitive.

10.1.3 To prevent any contamination, the dust cap should always be on the product unless the product is connected to the optical cable.

10.1.4 Installers must clean and visually inspect the optical cable in advance to connect the cable to the product using the devices specifically designed for the purpose.

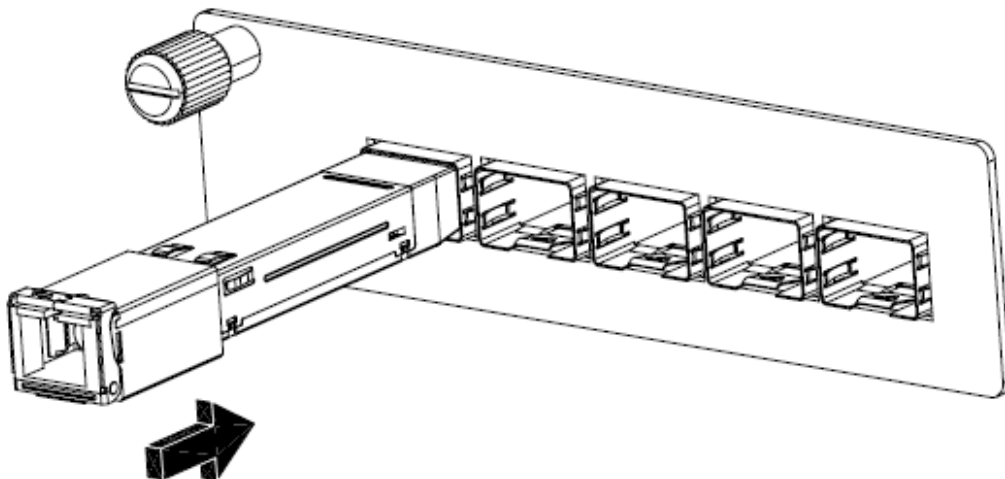
## 10.2. Installation of the XGSPON STICK

To install XGSPON STICKs, follow these steps:

---

**STEP 1** Wear an ESD-preventive wrist or ankle strap and follow its instructions for use.

**STEP 2** Close the bail before inserting the XGSPON STICK.

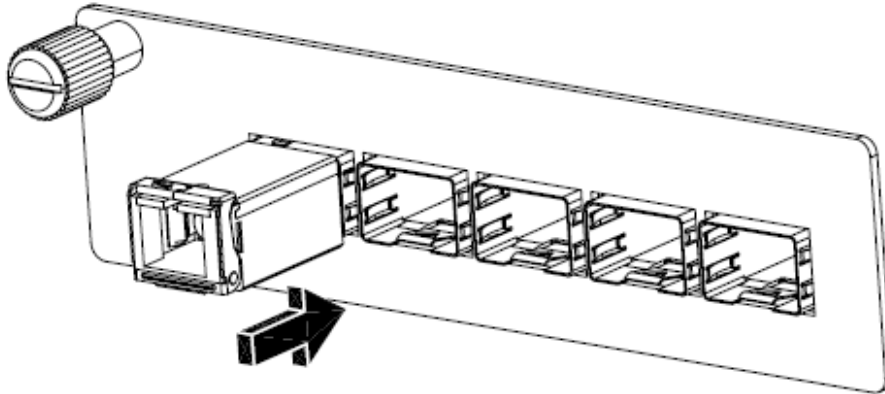


[Figure 9-1] Installing a XGSPON-STICK into port.

## XGSPON-STICK

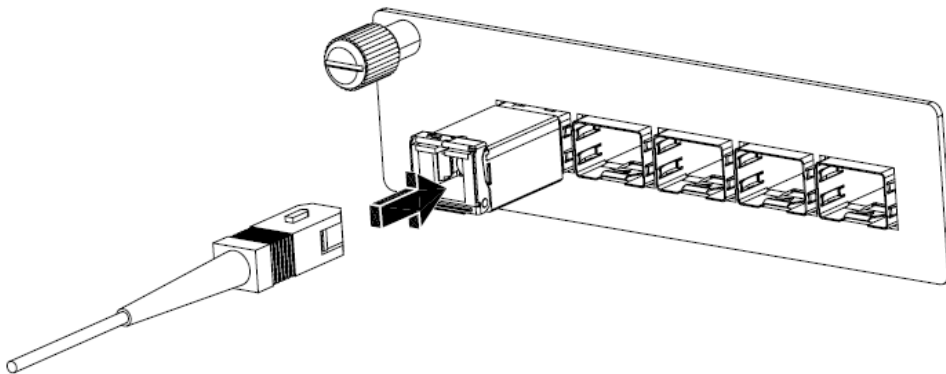
---

**STEP 3** Line up the XGSPON STICK with the port and slide it into the port.



[Figure 9-2] Completely seated XGSPON-STICK.

**STEP 4** Insert optic cable to the XGSPON STICK.



[Figure 9-3] Cabling a XGSPON-STICK.



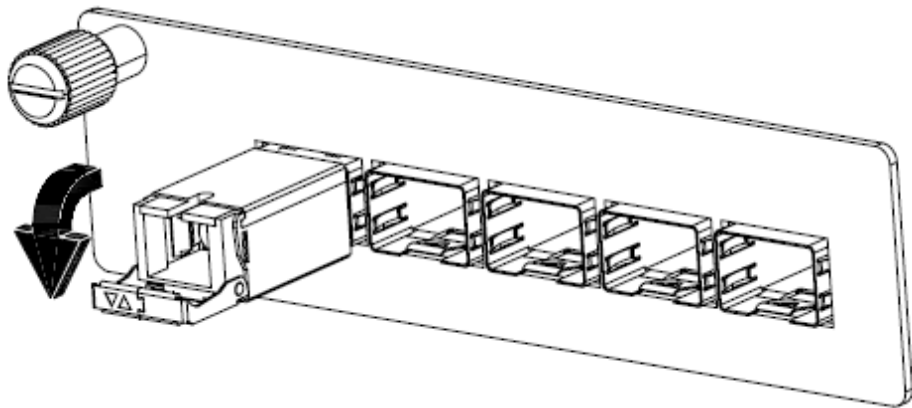
Verify that the XGSPON STICKS are completely seated and secured in their assigned receptacles on the line card by firmly pushing on each XGSPON STICK.

If the XGSPON STICK is not completely seated and secured in the receptacle, you will hear a click as the triangular pin on the bottom of the XGSPON STICK snaps into the hole in the receptacle.

## 10.3. Removal of the XGSPON STICK

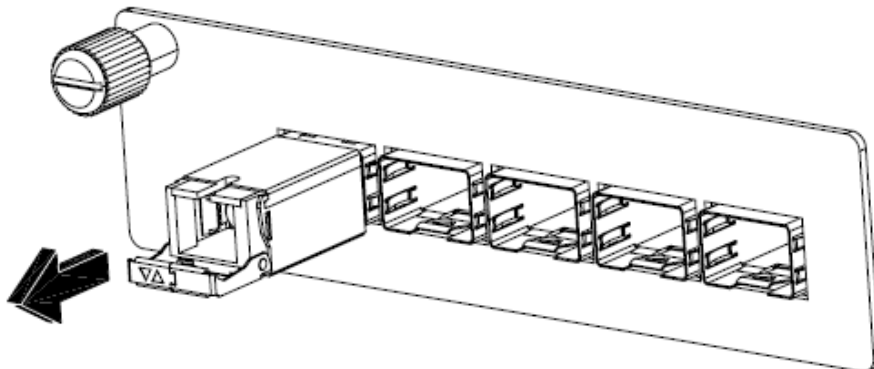
To remove XGSPON STICKs, follow these steps:

- STEP 1** Wear an ESD-preventive wrist or ankle strap and follow its instructions for use.
- STEP 2** Remove optical cables from the XGSPON STICK.
- STEP 3** Open and let down the bail on the XGSPON STICK with your index finger. If the bail is fastened and you cannot use your index finger to open it, use a small flat-blade screwdriver to open the bale clasp.



[Figure 9-4] Bail to unlatch.

- STEP 4** Grasp the XGSPON STICK between your thumb and index finger and carefully remove it from the port.



[Figure 9-5] Pull the PON-STICK from the port.

## XGSPON-STICK

---

- STEP 5** Place the XGSPON STICK in its original packaging, antistatic bag, or other protective storage environment.
- STEP 6** Protect your line card by inserting clean SFP module cage covers into the optical module cage where the XGSPON STICK is not installed.
- 
-

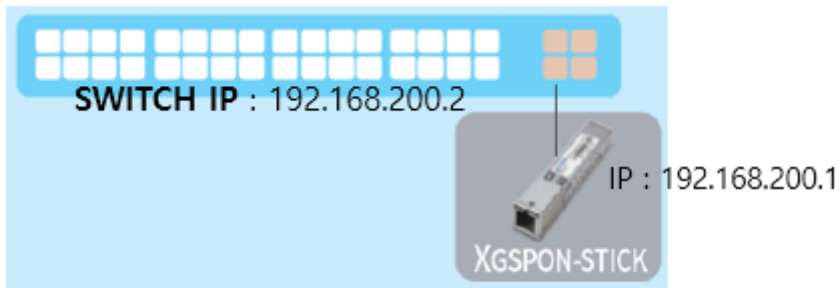
# 11. Configuration

## 11.1. SSH/Telnet Connection

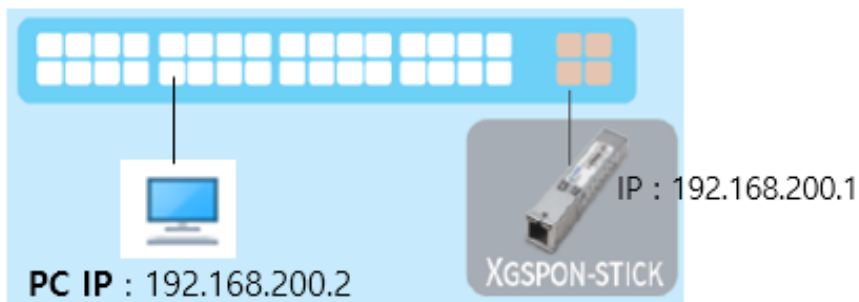
(The function is supported from Software V083.01)

The default xgspn-stick IP address is 192.168.200.1/24.

Support only untagged packet



Access from switch



Access from PC

In order to access SSH/telnet from the host switch, IP communication must be performed.

Step 1, set the IP of the host switch.

Step 2, connect by SSH/telnet from host switch

If success login, the prompt [/] # will be displayed

ID/PASSWORD:

SSH / TELNET : admin / zrmt123!@#

## 11.2. REGID Setting

(The function is supported from Software V083.01)

Registration ID can be modified through SSH/telnet as follows. Maximum 36bytes input is possible..

```
[/] # setenv reg_id ZRMT67061234  
[/] # saveenv  
[/] # reset
```

# 12. Miscellaneous

## 12.1. Safety Precautions

To avoid damaging the product or the human body, please observe the following Safety precautions.

ZARAM Technology assumes no liability for customer failure to comply with these requirements.



Do not remove module covers or shells when operating.



Ensure that the unit power is turned off during cleaning.



Ensure that other power/light sources are disabled during the cleaning of the optical interfaces.



Never look into the end of an optical interface while the product is operational. Laser radiation can be harmful to the human eye and injury may occur under prolonged exposure.



Do not install any unauthorized modifications to the product.



## 12.2. Product handling precautions

To avoid damaging the product or malfunction the product, please observe the following Product handling precautions.



Be careful not to excessive static applied.  
The performance will be able decline if static with over +/- 2KV is applied.



Do not give a shock, impact or dropping.  
If give strong shock, impact or dropping, those will be reasons about damage or breakdown or failure.  
Manufacture does not have responsibility if troubles are made by users.



Do not give damages or removals to product label.  
It will be very hard to identify the product, so that A/S is not available.



Try connecting after checking any foreign materials on Connector or Pad.  
If any foreign material is on connector, contact failure can be happened.  
Please clean the area, and then connect. Be careful not to give any damage.



Do not modify or take apart or fix.  
If do above, risk will be happened such as product damage or breakdown or electric shock or fire.



Disconnect all cables before removing or installing the product.



Make sure that the power used meets the specifications of the product.



Removing and inserting the product can shorten its useful life, so you should not remove and insert product any more often than is absolutely necessary.

# 13. Troubleshooting Diagnostic

## 13.1. Debug from SSH/Telnet

### 13.1.1. Connect to xgspn-stick by SSH/telnet from Host

Refer to 11.1.1. SSH/Telnet Connection

### 13.1.2. Reset Strategy

In the following cases, resets the XGSPON-STICK.

- Watchdog : 60 seconds, the Stick resets the device if the software is unable to exit from a specific section such as a deadlock situation.
- If online is not available for 30 seconds after PON initialization.
- OMCI & PLOAM reset request
- If TCONT is not allocated for 600 seconds after online
- If ONU can not receive bw\_map in 20 seconds on activation normally.
- OMCI Tx fail(buffer full)
- Emergency error state

### 13.1.3. Logging

The logs are separated by module, and you can set the debugging level for each module.

Command	Description
<b>log set dbg_level &lt;dbg_level&gt; &lt;module&gt;... / (all)</b>	set debug level of the module.

## XGSPON-STICK

<b>log show dbg_level</b>	show all current debug level of the module.
<b>log show mod &lt;module&gt; ... (flash)</b>	show log of the specific module.
<b>log show line &lt;begin #/end #/all&gt; (flash)</b>	show all or a few lines of the log.
<b>log save dbg_level (factory)</b>	save all current debug level to flash(env) area. Factory : set factory default
<b>log fs erase</b>	Erase log flash area

Dbg\_level: OFF (0), Emergency (1), Error (2), Warning (3), Info (4), and Verbose (5)

Module : OMCI, PON, ETH, SFP, PTP, SYNCE, ONU, LOGIN

Factory default level :

Warning : OMCI , PTP, SYNCE, ONU, LOGIN

Info : PON, SFP

```
ZXOS11NPI [/] # log show mod PON          -> display per module
01:53:41.291015 [PON] IN - zapi_show_pon_state_sync
01:53:41.291015 [PON] OUT - shmem_execute
01:53:41.291015 [PON] OUT - zapi_show_pon_state_sync
ZXOS11NPI [/] # log show line end 20      -> display latest 20 log
ZXOS11NPI [/] # log show line end 20 flash -> display latest 20 log from flash
```

- Emergency: Critical Error Conditions
  - PON: {pon-cpu fail} or {failed to reset serdes} or {TX fail} or { can't recovery omci buffer }
  - ONU: {can't open firmware file} or {wrong image file}
  - ETHC: {ethc-cpu fail} or {increased "ready error"}
  
- Error: system operation stopped and can be recovered after reset or re-initialization.
  - OMCI: { omci message parsing error } or { reboot setting with invalid parameter }
  - PON: { OMCI send error } or { fail get pon data(tcont, queue, gempport, serdes etc..) } or { failed to notify alarm } or { onu not connected } or { omci ds size too large } or { omci ds no buffer } { no acquired data for omci messege } or { failed to request Gpio-irq for [LOS/dying-gasp] } or { pon deactivate failed to create task (omci RX, Heartbreat task) }
  - ONU: { stopped onu/omci stack } or { not onlined within 30 seconds after init } or { message pool exhausted(omci message) failed to apply config(to subcpu) } or {occurring rogue onu } or { shared memory full failed to create task (wlog wr, onu TX/RX handler) }
  - ETHC: { failed to add acl rule } or { can't read mac/vlan table } or { failed to register ETH irq } or { failed to create task(packet RX, pon RX task, mcast\_task, igmp\_1sec\_task) } or { exceeding supported vlan }
  - SFP: { read/write fail } or { can't find I2C driver } or { eeprom failed to change } or { occurred rogue-onu }
  - SYNCE : { failed to create synce task } or { failed to init fpga }

### 13.1.4. counter along data path – PON counter

check GEM port counter using CLI.  
you should enter "onu set pon counter gem enable" CMD to get GEM statistic information.

```
ZXOS11NPI [/] # onu reset pon counter
GEM port idx(2000000) counter reset
GEM port idx(2000000) counter reset
GEM port idx(2000000) counter reset
```

```
ZXOS11NPI [/] # onu show pon counter
```

```
-----
T-CONT idx : 0 | Alloc-ID : 1047(0x0417)
-----
GEM idx | dir | GEM frames | GEM Payload bytes
-----
  003   | Rx |      1410 |    3381938
         | Tx |      1469 |    3351640
-----
  001   | Rx |      1411 |    3329176
         | Tx |      1470 |    3584136
-----
Dir      | total GEM frames | total GEM payload bytes
-----
Rx       |          2821    |           2939
Tx       |          2939    |        6935776
-----

PON Rx FEC statistic
-----
Corrected byte          : 0
Corrected code words    : 0
Uncorrectable code words : 0
Total code words        : 3445103697
-----
```

Check FEC statistic

If '*Uncorrectable\_code\_words*' counter increases, the optical signal is not good

Corrected\_bytes : The number of bytes that were corrected by the FEC function.

Corrected\_code\_words : The number of code words that were corrected by the FEC.

Uncorrectable\_code\_words : The number of code words that were not corrected by the FEC

Total\_code\_words : The number of total received code words.

(code words is 8-byte size)

### 13.1.5. counter along data path – SWITCH counter

PON-Tx, PON-Rx : PON-side switch port(connected with PON)

UNI-Tx, UNI-Rx : UNI-side switch port

CPU-Tx, CPU-Rx : Port on which the ponstick(ZXOS11NPI /ZXOS11EPI) CPU counter

Misc Packets

Pause : pause frame

Under : frame size is shorter than min length in pctrlb (switch show port ctrl)

Flag : Under & FCS error

## XGSPON-STICK

Over : frame size is longer than frame size in pctrl0 (switch show port ctrl)

Jabber : Over & FCS error

### Error Packets

Rx : error is occur in phy level.

FCS : occur in phy level or duplex does not fit.

SOB/EOB : packet is broken.

Ready : Buffer storing packet is full

clear counter : switch show counter-clear

ZXOS11NPI [/] # switch show counter-clear

ZXOS11NPI [/] # switch show counter

```

=====
                PON-Rx      PON-Tx      UNI-Rx      UNI-Tx      CPU-Rx      CPU-Tx
-----
ucast            1652427      1652252      1652252      1652427         0         0
mcast             11           0           0           11           0         11
bcast             0           0           0           0           0         0
-----
0~64              0           0           0           0           0         0
65~127            11           0           0           11           0         11
128~255           0           0           0           0           0         0
256~511           0           0           0           0           0         0
512~1023          0           0           0           0           0         0
1024~             1652427      1652252      1652252      1652427         0         0
-----
Pause             0           0           0           0           0         0
Under             0           0           0           0           0         0
Over              0           0           0           0           0         0
Fragment          0           -           0           -           0         -
Jabber            0           -           0           -           0         -
-----
RX err            0           -           0           -           0         -
FCS err           0           -           0           -           0         -
SOB err           0           -           0           -           0         -
EOB err           0           -           0           -           0         -
RDY err           0           -           0           -           0         -
-----
good-byte         2478641292      2478378000      2478378000      2478641292         0         792
bad-byte          0           -           0           -           0         -
=====
DROP
=====
                rate-limit      PORT-MAP      DROP
-----
PON                 0           0           0
UNI                 0           0           0
=====

```

If multicast is failed, check multicast group and mac learning table below CLI.  
both the mac and the group should be registered.

ZXOS11NPI [/] # switch show mac

```

-----
 mac address | port | FID | aging time | attr
-----+-----+-----+-----+-----
54:EE:75:90:DF:12 | 0-0000010 | 0 | 0 | dynamic
74:D4:35:E4:BA:7A | 0-0000010 | 0 | 0 | dynamic
00:0B:6F:50:01:17 | 0-0000010 | 0 | 0 | dynamic
30:9C:23:D9:70:89 | 0-0000010 | 0 | 0 | dynamic
C8:F8:6D:C4:D3:43 | 0-0000001 | 0 | 6 | dynamic
3C:97:0E:1A:21:7C | 0-0000010 | 0 | 0 | dynamic
00:25:90:E3:B3:FD | 0-0000010 | 0 | 0 | dynamic
-----

```

## XGSPON-STICK

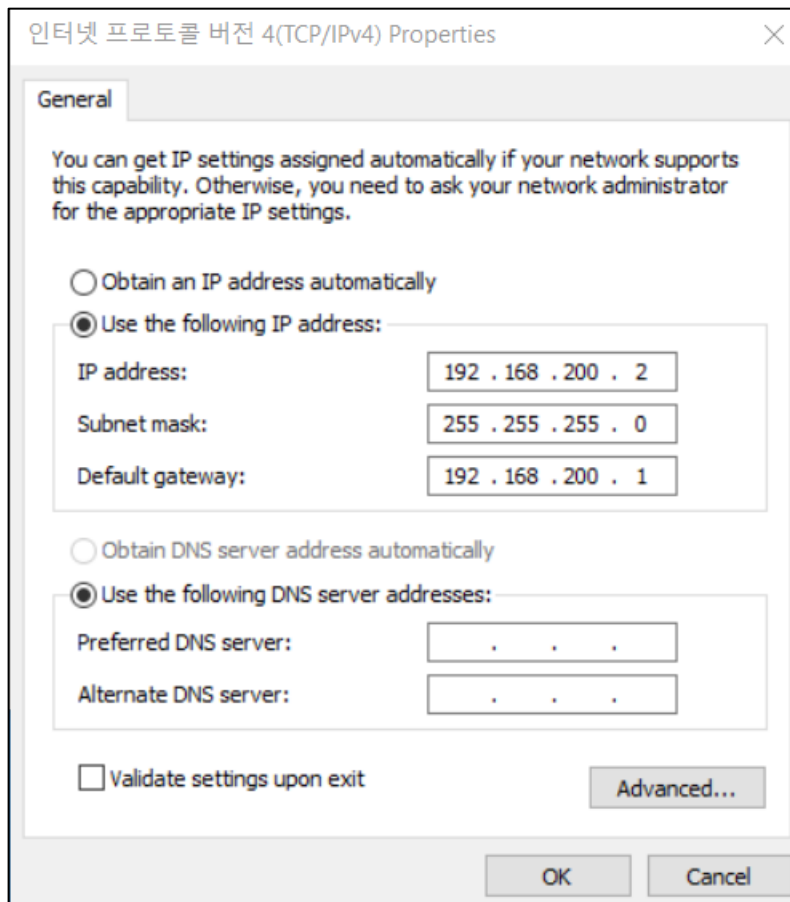
```
00:07:70:C1:1E:A8 | 0-000010 | 0 | 1 | dynamic
-----
Total mac count : 8
aging period : 115500
```

Display the group joined to the multicast.

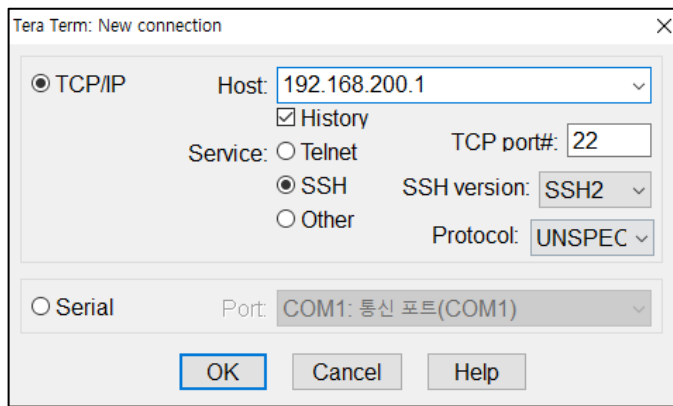
```
ZXOS11NPI [/] # mcast showg
- igmp-state : enabled
- query-timeout : 260
- immediate_leave_ : 1
-----
- group : 239.1.1.1 static:0,staticport:0x0,rowkey:0x0
vid:3000 p:1 80:00:02:c0:f2:84 192.85.1.50
```

### 13.1.6. Method to Check PON Status

- Connect SSH/telnet on UNI side(user side).
  1. Default Ip for connecting SSH/telnet is 192.168.200.1
  2. Set ip of host pc to same network to XGS PON.



3. Connect to SSH/telnet



Default ID/PASSWORD:

SSH / TELNET : admin / zrmt123!@#

- PON Link check list

1. Check Rx optical power. Rx power should be in the proper range. (-10) ~ (-28)dBm
  - A. connect a suitable attenuator. Too high rx optical power intensity can damage the laser diode. In this case it is impossible to use.
  - B. If low rx power, remove the attenuator. And if connected, clean the optical cable with an optical cleaner. if the optical cable is defective, replace it.

**Check FEC statistic**

If *'Uncorrectable\_code\_words'* counter increases, the optical signal is not good, so Check-list should be checked.

Corrected\_bytes : The number of bytes that were corrected by the FEC function.

Corrected\_cod\_words : The number of code words that were corrected by the FEC function.

Uncorrectable\_code\_words : The number of code words that were not corrected by the FEC function.

Total\_code\_words : The number of total received code words.  
(code word is 8-byte size)

```
ZXOS11NPI [/] # onu show pon counter
```

```
-----
PON Rx FEC statistic
-----
Corrected byte           : 0
Corrected code words    : 0
Uncorrectable code words : 0
Total code words        : 3445103697
-----
```

2. Check DDM Info

Access the DDM of the ONU Stick installed on the L2 Switch or wireless equipment to read and check the followings are all within the ranges defined in the specification (Tx Power, Rx Power, Bias Current and Temperature)

```
ZXOS11NPI [/] # sfp info
diagnostic monitoring type: 0x68
internally calibrated
temperature: 61.500C
supply voltage: 3.277V
tx bias current: 12.544mA
```

## XGSPON-STICK

```
tx output power: 3.802mW (5.801dBm)
rx optical power: 0.008mW (-21.079dBm) [average]
```

Item	Normal Range	Comments
Optic Tx Power	3.7~8dBm	
Optic Rx Power	-28.5~-10dBm	Caution: Too much optic-input-power(>-5dBm) can damage the transceiver
Transceiver Temperature	-40C~85C	
Transceiver Voltage	3.1~3.5V	
Transceiver Laser-Bias-Current	4~80mA	

### 3. Check pon serdes status

If SERDES state is bad, perform check list.

```
ZXOS11NPI [/] # onu show pon serdes
```

```
=====
ONU PON Serdes state
-----
Serdes state | Very good(0x3e)
=====
```

If value is under 0x38(Bad), please replug optical line or reboot XGSPON. If that does not work, change the stick.

### 4. Make sure the optical cable is connected well(reconnect to ensure a good contact)

If not connected, sync state=Hunt

#### Check PON sync state

Sync state	Description
Hunt(init)	Initial state searching for the PSync pattern.
PreSync	perform Psync and SFC verification.
Sync	normal state
ReSync	In case of Psync or SFC verification fails, it enters the Resync state.

```
ZXOS11NPI [/] # onu show pon sync
```

```
=====
ONU Downstream Synchronization state
-----
Sync state | Sync(2)
=====
```

### 5. Check the Rogue ONU

If rogue\_onu value is 32768, Rogue detect state, optic tx has been disabled.

```
ZXOS11NPI [/] # printenv
```

```
⇒ rogue_onu=1 (0:func off, 1:func on, 32768: onu detect rogue & auto-tx-laser-off )
```

or

```
admin@ZXOS11NPI [/] # getenv rogue_onu
```

```
1
```



6. Check whether the S/N matches the one registered in the OLT  
In this case, sync state is sync and activation state rises to Serial\_Number state and then falls back to the beginning.

**Check pon activation state**

Operation state	Description
Init	initial state, Once the downstream synchronization is attained, the ONU transitions to the Profile Learning substate.
ProfileLearning	Once an ONU receives a serial number grant, it responds with a Serial_Number_ONU PLOAM message
SerialNumber	After SerialNumber grant, set ONU-ID.
Ranging	Assignment of equalization delay by the OLT. Once the ONU receives the Ranging_Time message with absolute equalization delay, it transitions to the Operation state (O5)
Operation	normal operation state.
Intermittent_LODS	in case of loss of downstream synchronization. If signal is re-acquired before timer TO2 expires, the ONU transitions back into the Operation state (O5).
EmergencyStop	If an ONU receives a Disable_Serial_Number message, laser off

```
ZXOS11NPI [/] # onu show pon activation
=====
ONU Downstream Synchronization state
-----
Oper. state | Operation
=====
```

7. Check Process, Memory status

```
ZXOS11NPI [/] # sysmon cpu
CPU usage
cpu usage : 6.702 %
```

```
ZXOS11NPI [/] # sysmon memory
Memory usage
used/total = 7761424/30318736 (25.599432 %)
```

8. Check DDM info using Host Switch CLI
9. Check Optical Power using Optical Power Meter
  - Provides CLI to search log history related to PON link.

```
ZXOS11NPI [/] # log show mod PON
```

For detailed usage, see 14.3.7. Troubleshooting Management.

### 13.1.7. Method to troubleshoot SFP-Host connect

- UNI Link check list
1. Check Host switch link status

## XGSPON-STICK

---

2. Check XGSPON-STICK UNI Serdes status

```
ZXOS11NPI [/] # switch serdes info
=====
SWITCH ETH Serdes state
-----
Serdes state   | Very good(0x3e)
=====
```

If value is under 0x38(Bad), please replug optical line or reboot XGSPON. If that does not work, change the stick

3. Check port1 state.

```
ZXOS11NPI [/] # switch show port status
=====
PORT | PORT_STATE
-----+-----
0    | Enable
1    | Enable
8    | Enable
=====
```

If port1 is disable, check OLT configuration or reboot XGSPON.

4. Check OLT configuration

# 14. Remote Debug by OMCI

## 14.1. Remote debug Command list

To use remote debug in OLT, the following CLI should be used.

```
Typ:admin> # remote-debug ont ng2:28/1/41 "command"
The contents of the command are as follows.
"help"
"showconfig"
"saveconfig"
"onu show key info"
"counter switch [pon / uni / cpu / clear]"
"counter gem [index 0 / clear]"
"counter fec [pon / clear]"
"counter type [ani / uni / discard]"
"switch macinfo [key]"
"switch igmpinfo"
"lct inet [192.168.200.1]"
"lct mask [255.255.255.0]"
"lct mac [00:11:22:aa:bb:cc]"
"reg_id [string]"
"rogue_onu [mode 1 / forced_on]"
"prbs [on / off]"
"sysmon [mdsync / cpu / process / memory]"
"loopback [enable / disable] [vid# | all]"
"tod enable"
"pps enable"
"dying-gasp-alarm enable"
"ssh reset_passwd"
"ssh uni [enable/disable]"
"cap [start | stop | show | show detail]"
"cap filter <reset>"
"cap f etype [0x[HEX_NUM] | 0x0800 pt [DEC_NUM]]"
"cap f [vid [DEC_NUM] | mactype [ucast|mcast|bcast] | m __:__:__:__:__]"
"reboot onu"
```

command	description
<b>help</b>	Shows all menus used as commands
<b>showconfig</b>	Show basic information of stick such as image version, serial, registration id, lct info, etc
<b>saveconfig</b>	Saves the config modified by remote debug to flash memory. If the config value is changed, "saveconfig" must be executed.

**XGSPON-STICK**

<b>onu show key info</b>	Shows key exchange and encryption information
<b>counter switch [pon/uni/cpu/clear]</b>	Shows the traffic counter of the switch inside the stick. When clearing, the counters of pon, uni, and all CPUs are cleared
<b>counter gem [index 0/clear]</b>	It shows upstream counter by gem port of pon block inside stick. First, enable and use, and disable when finished. When clearing, the count of all gem ports is cleared.
<b>counter fec [pon/clear]</b>	Show fec counter of pon port in stick.
<b>counter type [ani / uni / discard]</b>	Show us/ds counter at the ONU between UNI and ANI interfaces
<b>switch macinfo [key]</b>	Unicast MAC addresses learned by the ONU, if MAC bridge learning is used
<b>switch igmpinfo</b>	List of multiList of multicast IP addresses or related MAC addresses learned by the ONU through the IGMP protocol
<b>lct [inet/mask/mac]</b>	Modify network information to be used for SSH, etc. can check it with "showconfig" and save it as "saveconfig"
<b>reg_id [string]</b>	Modify the registration id passed to PLOAM. The string count that can be transferred to the remote debug is limited, so you can enter up to 18 characters, and you can check it with "showconfig". After changing, save it as "saveconfig"
<b>rogue_onu [mode 1/forced_on]</b>	<p>Rogue onu is forcibly generated for test purposes. There are only two types of rogue_onu mode: 1 (rogue_onu detect enable) and 32768 (rogue onu occurred).</p> <p>Test procedure ]</p> <ol style="list-style-type: none"> <li>1. Check rogue_onu=1 in "showconfig". (or perform "rogue_onu mode 1")</li> <li>2. Stick reboot to OLT cli. (~ reboot via-ploam)</li> <li>3. Perform "rogue_onu forced_on".</li> <li>4. After 10sec, the stick changes to tx off state.</li> <li>5. Ont-enable disable/enable in OLT to adjust the optical tx off/on of the stick.</li> <li>6. Stick reboot to OLT cli. (~ reboot via-ploam)</li> <li>7. After online through ont-enable disable -&gt; enable with OLT cli, execute "rogue_onu mode 1" and "saveconfig". (Do not "forced_on" Again)</li> <li>8. Stick reboot to OLT cli. (~ reboot via-ploam)</li> <li>9. Stick booting and working in normal state.</li> </ol>
<b>prbs [on/off]</b>	<p>Turn on "prbs on" for the purpose of prbs test. After setting, save it as "saveconfig". If it is set to "prbs on", the prbs mode is enabled at the next booting, and the prbs mode is automatically disabled at the next boot after the test is finished and normal booting is performed</p> <p>Test procedure ]</p>

	<ol style="list-style-type: none"> <li>1. Check prbs_mode=32769 in "showconfig" after "prbs on", "saveconfig".</li> <li>2. Stick reboot to OLT cli. (~ reboot via-ploam)</li> <li>3. After rebooting, the stick operates in prbs mode.</li> <li>4. After completion of test, stick plug off / on manually.</li> <li>5. Stick booting and working in normal state</li> </ol>
<b>sysmon</b> <b>[mdsync/cpu/process/memory]</b>	Shows the system monitoring information. mdsync : shows the current mib data sync counter. cpu : shows the current cpu usage as a percentage. process : shows the current status of each task. memory : shows the current memory usage as a percentage.
<b>loopback [enable / disable]</b> <b>[vid#/all]</b>	loopback test at ani port. Specific vlan or all vlan.
<b>tod enable</b>	Default : disable. ToD pin is SFP PIN(2). After stick is rebooting, then ToD will Disable.(Not support disable command)
<b>pps enable</b>	Default : disable. PPS pin is SFP PIN(9). After stick is rebooting, then PPS will Disable. (Not support disable command)
<b>dying-gasp-alarm enable</b>	Default : disable. Dying-gasp detecting pin is SFP PIN(7). After stick is rebooting, then Dying-gasp detecting will Disable. (Not support disable command)
<b>ssh reset_passwd</b>	Set ssh password to default.
<b>ssh uni [enable/disable]</b>	Default : disable. After stick is rebooting, then ssh uni will Disable. Used for connecting to ssh from Uni side.
<b>cap [start   stop   show   show detail]</b>	Captures incoming and outgoing packets to the CPU. cap start: start packet capture cap stop: stop packet capture cap show: show captured packet cap show detail: show detail captured packet
<b>cap filter &lt;reset&gt;</b>	display filter info. cap filter: show capture filter info cap filter reset: reset capture filter
<b>cap f etype [0x[HEX_NUM]   0x0800 pt [DEC_NUM]]</b>	set capture packet's filter info (etype:ether type, pt: ip protocol number)
<b>cap f [vid [DEC_NUM]   mactype [ucast mcast bcast]   m _: _: _: _: _: _:]</b>	set capture packet's filter info(vid, mac type, mac address)
<b>reboot onu</b>	rebooting onu device

## 14.2. Remote debug Command details

- **help**

Shows all menus used as commands

## XGSPON-STICK

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "help"
Format: ASCII
Type Command with Double quotes
"help"
"showconfig"
"saveconfig"
"onu show key info"
"counter switch [pon / uni / cpu / clear]"
"counter gem [index 0 / clear]"
"counter fec [pon / clear]"
"counter type [ani / uni / discard]"
"switch macinfo [key]"
"switch igmpinfo"
"lct inet [192.168.200.1]"
"lct mask [255.255.255.0]"
"lct mac [00:11:22:aa:bb:cc]"
"reg_id [string]"
"rogue_onu [mode 1 / forced_on]"
"prbs [on / off]"
"sysmon [mdsync / cpu / process / memory]"
"loopback [enable | disable] [vid# | all]"
"tod enable"
"pps enable"
"dying-gasp-alarm enable"
"ssh reset_passwd"
"ssh uni [enable/disable]"
"cap [start | stop | show | show detail]"
"cap filter <reset>"
"cap f etype [0x[HEX_NUM] | 0x0800 pt [DEC_NUM]]"
"cap f [vid [DEC_NUM] | mactype [ucast|mcast|bcast] | m __:__:__:__:__]"
"reboot onu"
```

Status: SUCCES

### • showconfig

Show basic information of stick such as image version, serial, registration id, lct info, etc

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "showconfig"
Format: ASCII
target_image=0 (Activated)
image0_version=NK00_V087.03
image1_version=NK00_V087.02
reg_id=
sn_vsid=0x5a524d54
sn_vssn=0x67060046
equipment_id=ZXOS11NPI
prbs_mode=0
rogue_onu=1
lct inet=192.168.200.1
lct mask=255.255.255.0
lct mac=00.0b.6f.aa.00.02
iphost inet=
iphost mask=
iphost gateway=
```

Status: SUCCESS

### • saveconfig

Saves the config modified by remote debug to flash memory. If the config value is changed, "saveconfig" must be executed.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "saveconfig"
Format: ASCII
Config save complete
```

Status: SUCCESS

● **onu show key info**

Shows key exchange and encryption information

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "onu show key info"
Format: ASCII
key change counter      4
omci key count          0
omci key now index     0
omci key index 0       482
omci key index 1        0
omci key index 2        0
omci key index 3        0
set ring key count      0
set ring key index      0
alloc pq key count      0
alloc pq key index      0
latest key index        2
UNICAST KEY 1(buf)      3c3206ec *****
UNICAST KEY 2(buf)      459bf3a6 *****
UNICAST KEY 1(reg)      3c3206ec *****
UNICAST KEY 2(reg)      459bf3a6 *****
BROADCAST KEY 1(buf)    00000000 *****
BROADCAST KEY 2(buf)    00000000 *****
BROADCAST KEY 1(reg)    00000000 *****
BROADCAST KEY 2(reg)    00000000 *****

Status: SUCCESS
```

● **counter switch [pon/uni/cpu/clear]**

Shows the traffic counter of the switch inside the stick. When clearing, the counters of pon, uni, and all CPUs are cleared

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "counter switch clear"
Format: ASCII
ethc switch counter cleared
Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "counter switch pon"
Format: ASCII

PORT[0] - PON side Traffic counter
[RX] good : 0x000000012064e738 (4838451000) bytes
      bad  : 0x0000000000000000 (0) bytes
-----
UniCast(Rx)      : 3225634
UniCast(Tx)      : 3225661
MultiCast(Rx)    : 0
MultiCast(Tx)    : 0
BroadCast(Rx)    : 0
BroadCast(Tx)    : 0
Packets ~64(Rx)  : 0
Packets ~64(Tx)  : 0
Packets 65~127(Rx) : 0
Packets 65~127(Tx) : 0
Packets 128~255(Rx) : 0
Packets 128~255(Tx) : 0
Packets 256~511(Rx) : 0
Packets 256~511(Tx) : 0
Packets 512~1023(Rx) : 0
Packets 512~1023(Tx) : 0
Packets 1024~(Rx) : 3225662
Packets 1024~(Tx) : 3225661
Pause(Rx)        : 0
Pause(Tx)        : 0
Under(Rx)         : 0
Under(Tx)         : 0
Over(Rx)          : 0
```

## XGSPON-STICK

```
Over(Tx)      : 0
Fragment      : 0
Jabber        : 0
RxErr         : 0
FCS           : 0
SOB           : 0
EOB           : 0
Ready         : 0
RateLimitDrop : 0
PortMapDrop   : 0
PortDrop      : 0
-----
```

Status: SUCCESS

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "counter switch uni"
Format: ASCII
```

```
PORT[1] - UNI side Traffic counter
[RX] good : 0x000000013d32acc4 (5321698500) bytes
      bad : 0x0000000000000000 (0) bytes
-----
```

```
UniCast(Rx)      : 3547798
UniCast(Tx)      : 3547826
MultiCast(Rx)    : 0
MultiCast(Tx)    : 0
BroadCast(Rx)    : 0
BroadCast(Tx)    : 0
Packets ~64(Rx)  : 0
Packets ~64(Tx)  : 0
Packets 65~127(Rx) : 0
Packets 65~127(Tx) : 0
Packets 128~255(Rx) : 0
Packets 128~255(Tx) : 0
Packets 256~511(Rx) : 0
Packets 256~511(Tx) : 0
Packets 512~1023(Rx) : 0
Packets 512~1023(Tx) : 0
Packets 1024~(Rx) : 3547827
Packets 1024~(Tx) : 3547826
Pause(Rx)        : 0
Pause(Tx)        : 0
Under(Rx)        : 0
Under(Tx)        : 0
Over(Rx)         : 0
Over(Tx)         : 0
Fragment         : 0
Jabber           : 0
RxErr            : 0
FCS              : 0
SOB              : 0
EOB              : 0
Ready            : 0
RateLimitDrop    : 0
PortMapDrop      : 0
PortDrop         : 0
-----
```

Status: SUCCESS

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "counter switch cpu"
Format: ASCII
```

```
PORT[8] - CPU side Traffic counter
[RX] good : 0x0000000000000000 (0) bytes
      bad : 0x0000000000000000 (0) bytes
-----
```

```
UniCast(Rx)      : 0
UniCast(Tx)      : 0
MultiCast(Rx)    : 0
```



## XGSPON-STICK

```
MultiCast(Tx)      : 0
BroadCast(Rx)     : 0
BroadCast(Tx)     : 0
Packets ~64(Rx)   : 0
Packets ~64(Tx)   : 0
Packets 65~127(Rx) : 0
Packets 65~127(Tx) : 0
Packets 128~255(Rx) : 0
Packets 128~255(Tx) : 0
Packets 256~511(Rx) : 0
Packets 256~511(Tx) : 0
Packets 512~1023(Rx) : 0
Packets 512~1023(Tx) : 0
Packets 1024~(Rx) : 0
Packets 1024~(Tx) : 0
Pause(Rx)         : 0
Pause(Tx)         : 0
Under(Rx)         : 0
Under(Tx)         : 0
Over(Rx)          : 0
Over(Tx)          : 0
Fragment         : 0
Jabber           : 0
RxErr            : 0
FCS              : 0
SOB              : 0
EOB              : 0
Ready           : 0
```

-----  
Status: SUCCESS

### • counter gem [index 0/clear]

It shows upstream counter by gem port of pon block inside stick. First, enable and use, and disable when finished. When clearing, the count of all gem ports is cleared.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "counter gem index 1"
Format: ASCII
gem_port_instance: 0xffffe(0)
gem_port_instance: 0x03ff(1)
  Received_gem_frames      : 55335287
  Transmitted_gem_frames  : 55506635
  Received_payload_bytes  : 7082916624
  Transmitted_payload_bytes: 7104848146
gem_port_instance: 0xffffd(2)
gem_port_instance: 0x0400(3)
gem_port_instance: 0x0401(4)
Status: SUCCESS
```

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "counter gem clear"
Format: ASCII
gem_port_instance(index): 0xffffe(0) Counter Cleared
gem_port_instance(index): 0x03ff(1) Counter Cleared
gem_port_instance(index): 0xffffd(2) Counter Cleared
gem_port_instance(index): 0x0400(3) Counter Cleared
gem_port_instance(index): 0x0401(4) Counter Cleared
Status: SUCCESS
```

### • counter fec [pon/clear]

Show fec counter of pon port in stick.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "counter fec pon"
Format: ASCII
Corrected_bytes      : 0
Corrected_code_words : 0
Uncorrectable_code_words: 0
Total_code_words     : 40588101
```

## XGSPON-STICK

Status: SUCCESS

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "counter fec clear"
Format: ASCII
pon fec counter cleared
Status: SUCCESS
```

### • counter type [ani / uni / discard]

Show us/ds counter at the ONU between UNI and ANI interfaces.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/38 "counter type ani"
Format: ASCII
ANI side traffic counter
-----
UniCast(DS)   : 1652427
UniCast(US)   : 1652252
MultiCast(DS) : 1
MultiCast(US) : 0
BroadCast(DS) : 0
BroadCast(US) : 0
-----
to counter reset, "counter switch clear"
```

Status: SUCCESS

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/38 "counter type uni"
Format: ASCII
UNI side traffic counter
-----
UniCast(DS)   : 1652427
UniCast(US)   : 1652252
MultiCast(DS) : 1
MultiCast(US) : 0
BroadCast(DS) : 0
BroadCast(US) : 0
-----
to counter reset, "counter switch clear"
```

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/38 "counter type discard"
Format: ASCII
Discarded counter
-----
DS(P0) : 0
US(P1) : 0
-----
to counter reset, "counter switch clear"
```

Status: SUCCESS

### • switch macinfo [key]

Unicast MAC addresses learned by the ONU, if MAC bridge learning is used.

Considering the buffer size, the max list is limited to 1000, and if you want to output the counter after 1000, insert the Next Key that is output after executing the command and print the list after that.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/38 "switch macinfo 0"
Format: ASCII
-----
  mac address | port | fid | aging time | attr
-----+-----+-----+-----+-----
  00:10:94:00:00:02 | PON | 0 | 125 | dynamic
  00:10:94:00:00:01 | UNI | 0 | 125 | dynamic
  3C:8B:CD:F0:5E:39 | PON | 0 | 33 | dynamic
-----
Total mac count : 3
Next Key : 0, "switch macinfo 0"
Status: SUCCESS
```

## XGSPON-STICK

---

- **switch igmpinfo**

List of multiList of multicast IP addresses or related MAC addresses learned by the ONU through the IGMP protocol.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/38 "switch igmpinfo"
Format: ASCII
IGMP packet information
-----
Port |      MAC      |      IP      |
-----+-----+-----+
  1  | 00:10:94:00:00:05 | 192.85.1.7   |
-----
Status: SUCCESS
```

- **lct [inet/mask/mac]**

Modify network information to be used for SSH, etc. can check it with "showconfig" and save it as "saveconfig"

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "lct inet 192.168.200.1"
Format: ASCII
inet : 192.168.200.1
Modified, Must execute "saveconfig"
This value is adapted after reset

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "lct mask 255.255.255.0"
Format: ASCII
netmask : 255.255.255.0
Modified, Must execute "saveconfig"
This value is adapted after reset

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "lct mac 00:11:22:aa:bb:cc"
Format: ASCII
mac = 00:11:22:aa:bb:cc
Modified, Must execute "saveconfig"
This value is adapted after reset

Status: SUCCESS
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "saveconfig"
Format: ASCII
Config save complete

Status: SUCCESS
```

- **reg\_id [string]**

Modify the registration id passed to PLOAM. The string count that can be transferred to the remote debug is limited, so you can enter up to 18 characters, and you can check it with "showconfig". After changing, save it as "saveconfig"

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:88/1/46 "reg_id XGSPON"
Format: ASCII
reg_id=XGSPON
Modified, Must execute "saveconfig"

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "saveconfig"
Format: ASCII
Config save complete

Status: SUCCESS
```

## XGSPON-STICK

---

### • **rogue\_onu [mode 1/forced\_on]**

Rogue onu is forcibly generated for test purposes. There are only two types of rogue\_onu mode: 1 (rogue\_onu detect enable) and 32768 (rogue onu occurred).

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "rogue_onu mode 1"
Format: ASCII
Do not rogue_onu test Again, If you want, After reboot
rogue_onu=0x0001, Must execute "saveconfig"

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "saveconfig"
Format: ASCII
Config save complete

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "rogue_onu forced_on"
Format: ASCII

Status: FAILED
```

\* As onu goes to rogue\_onu immediately, can't normal Upstream traffic, so the status is displayed as FAILED.

### • **prbs [on/off]**

Turn on "prbs on" for the purpose of prbs test. After setting, save it as "saveconfig". If it is set to "prbs on", the prbs mode is enabled at the next booting, and the prbs mode is automatically disabled at the next boot after the test is finished and normal booting is performed

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "prbs on"
Format: ASCII
prbs mode on, Must execute "saveconfig"

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "prbs off"
Format: ASCII
prbs mode off Must execute "saveconfig"

Status: SUCCESS
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "saveconfig"
Format: ASCII
Config save complete

Status: SUCCESS
```

### • **sysmon [mdsync/cpu/process/memory]**

Shows the system monitoring information.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "sysmon mdsync"
Format: ASCII
mibDataSync: 51

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "sysmon cpu"
Format: ASCII
CPU usage
cpu usage : 6.199 %

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "sysmon process"
```

## XGSPON-STICK

```
Format: ASCII
Process status
-----
Task ID | status
-----+-----
0x0a010003 TIME:IS
0x0a010004 EV
0x0a010005 TIME
0x0a010006 EV
0x0a010007 EV
0x0a010008 TIME
0x0a010009 TIME
0x0a01000a TIME
0x0a01000b EV
0x0a01000c SYSEV
0x0a01000d SYSEV
0x0a01000e SYSEV
0x0a01000f SYSEV
0x0a010010 TIME
0x0b010001 CV
0x0b010005 CV
0x0b010006 CV
0x0b010007 READY
0x0b010008 SEM
0x0b010009 CV
0x0b01000a CV
0x0b01000b TIME
0x0b01000c CV
MTX(Mutex), SEM(Semaphore), EV(Event)
SYSEV(system Event), MSG(Message)
CV(Conditional Variable), SIG(Signal)

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "sysmon memory"
Format: ASCII
Memory usage
used/total = 7079040/29564096 (23.944719 %)

Status: SUCCESS
```

- **loopback [enable / disable] [vid#/all]**

loopback test at ani port. Specific vlan or all vlan.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "loopback enable 100"
Format: ASCII
loopback enabled
Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "loopback enable all"
Format: ASCII
loopback enabled
Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:81/1/42 "loopback disable"
Format: ASCII
loopback disabled
Status: SUCCESS
```

- **tod enable**

Default : disable.

ToD pin is SFP PIN(2).

## XGSPON-STICK

---

After stick is rebooting, then ToD will Disable.(Not support disable command)

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "tod enable"
Format: ASCII
already enabled.

Status: SUCCESS
```

- **pps enable**

Default : disable.

PPS pin is SFP PIN(9).

After stick is rebooting, then PPS will Disable. (Not support disable command)

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "pps enable"
Format: ASCII
1PPS output enabled. (SFP-PIN#9)
This setting is only maintained for this lifetime(until reboot). It is disabled on next boot.

Status: SUCCESS
```

- **dying-gasp-alarm enable**

Default : disable.

Dying-gasp detecting pin is SFP PIN(7).

After stick is rebooting, then Dying-gasp detecting will Disable. (Not support disable command)

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "dying-gasp-alarm enable"
Format: ASCII
Dying-gasp alarm enabled. (SFP-PIN#7, low-active)
This setting is only maintained for this lifetime(until reboot). It is disabled on next boot.

Status: SUCCESS
```

- **ssh reset\_passwd**

Set ssh password to default.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:88/1/46 "ssh reset_passwd"
Format: ASCII
Remote-Debug's password set to the Default value.

Status: SUCCESS
```

- **ssh uni [enable/disable]**

Default : disable.

After stick is rebooting, then ssh uni will Disable.

Used for connecting to ssh from Uni side.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "ssh uni disable"
Format: ASCII
ssh uni disabled.

Status: SUCCESS
```

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:88/1/46 "ssh uni enable"
Format: ASCII
ssh uni enabled.
```

```
Status: SUCCESS
```

- **cap start**

Start captures incoming and outgoing packets to the CPU.

## XGSPON-STICK

---

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap start"
Format: ASCII
! Capturing ethernet packets has been started.

Status: SUCCESS
```

### • cap stop

Stop captures incoming and outgoing packets to the CPU.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap stop"
Format: ASCII
! Capturing ethernet packets has been stopped.

Status: SUCCESS
```

### • cap stop

Stop captures incoming and outgoing packets to the CPU.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap stop"
Format: ASCII
! Capturing ethernet packets has been stopped.

Status: SUCCESS
```

### • cap show

Show captured incoming and outgoing packets to the CPU.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap show"
Format: ASCII
Total captured packets: 1
[ 0] 5:56:47.088014 RX<-PON len=76 DA/SA=01:00:5e:00:00:01 3c:8b:cd:f0:5e:39
tag=outer{p7:606 } etype=0800h(IPv4), protocol=02h(IGMP)

Status: SUCCESS
```

### • cap show detail

Show detail captured incoming and outgoing packets to the CPU.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap show"
Format: ASCII
Total captured packets: 1
[ 0] 5:56:47.088014 RX<-PON len=76 cpu_tag={08 10 08 04 00 25 e0 00} tag=outer{p7:606 }
etype=0800h(IPv4), protocol=02h(IGMP)
00000000 01 00 5e 00 00 01 3c 8b cd f0 5e 39 81 00 e2 5e ..^...<...^9...^
00000010 08 00 46 c0 00 20 00 00 00 01 02 44 17 00 00 ..F.. .....D...
00000020 00 00 e0 00 00 01 94 04 00 00 11 64 ee 9b 00 00 .....d....
00000030 00 00 00 00 00 00 00 00 .....

Status: SUCCESS
```

### • cap f etype [0x[HEX\_NUM] | 0x0800 pt [DEC\_NUM]]

Set capture packet's filter configure.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap f etype 0x0800 pt 2"
Format: ASCII
Capture filter ethertype : 0x800
Capture filter ip_protocol: 2

Status: SUCCESS
```

### • cap f [vid [DEC\_NUM] | mactype [ucast | mcast | bcast] | m \_\_:\_\_:\_\_:\_\_:\_\_]

Set capture packet's filter configure.

## XGSPON-STICK

---

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "cap f vid 200"
Capture filter vid 200

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "cap f mactype ucast"
Format: ASCII
Response txt is NONE.

Status: SUCCESS

typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "cap f m 00:11:22:33:44:55"
Format: ASCII
Capture filter MAC Address : 00:11:22:33:44:55

Status: SUCCESS
```

### • cap filter

Show capture packet's filtering info.

```
typ:isadmin@NOKIA_NGPON2>#remote-debug ont ng2:24/1/64 "cap f etype 0x0800 pt 2"
[Filter List]
-----
Ethernet Type : 0800h(2048)
  IP Protocol: 2
  OpCode      : SHOW_ALL
TX/RX_Port   : SHOW_ALL
VLAN_ID      : 200
Dst MAC Type : Unicast
MAC Address   : 00:11:22:33:44:55

Status: SUCCESS
```

### • cap filter reset

Reset capture packet's filtering info.

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "cap f etype 0x0800 pt 2"
Capture filter has been reset.

Status: SUCCESS
```

### • reboot onu

Restart onu device. (Because it reboots immediately, the omci response Status is always FAILED)

```
typ:isadmin@NOKIA_NGPON2># remote-debug ont ng2:24/1/64 "reboot onu"
Format: ASCII

Status: FAILED
```



# 15. CLI

ZXOS11NPI provides CLI for device management. CLI can be used using UART, SSH and Telnet.

## 15.1 Command list

section	command	comment
Environment	ver	Show version
	setenv	Set environment
	getenv	Show environment
	printenv	Show environment
	saveenv	Save environment
	passwd	Set password for SSH
Data access	zreg	Show asic register, set asic register
	zdump	Show the history of omci/register settings.
ONU Management	onu	Show pon info
	tftp	Get image from UNI
	wflash *	Upgrade using the image obtained by tftp.
L2 switch	switch	Show switch info
	mcast	Show mcast group, enable log
OMCI	showme	Show ME
	omci	Set attribute of ME for development
	alarm	Generate alarm for development
	arc	Enable alarm generation for development
Laser Driver	sfp	Show sfp info / set sfp info
	tx_state	Enable/disable optical TX
Log	log	Show log, set log level
cpu/mem status	sysmon	Show cpu/mem usage

## XGSPON-STICK

test	test *	Temporarily enable tod/pps/dying-gasp-alarm for test
Debug trace	synce	Show synce detail log
	ssh *	SSH packet trace and enable ssh on uni side.
	console/con *	Enable console output
	CFM	CFM command
	debug *	Development test command for inter cpu communication
Packet Capture	capture	Show captured incoming and outgoing packets to the CPU.

## 15.2 Command Syntax and Format

Format	Description
<b>Bold string</b>	Command
<i>Italics</i>	parameter
< A B >	Optional parameter, nothing or select one of them(A or B in case of left)
[ A B ]	Parameter, select one of them(A or B in case of left)

## 15.3. Commend details

### • ver

Read software version

```
ZXOS11NPI [/] # ver
onu/omci stack version: 0.81.9-zaram (build 11987) Aug 14 2020 17:46:40
pon version: 0.3
ethc version: 0.3
image0: XXSD__V0.81.9 valid active committed
image1: XXSD__V0.81.9 valid
```

### 15.3.1. Environment Variable Management

env_name	Default	Description
target_image	0	Target image ( 0 or 1)
tc_type	1	0(2.5G), 1(10G)
tx_split	1	1(GEM split enable), 0(disable)
sn_vsid	"ZRMT"	VSID
sn_vssn	-	VSSN
vendor_product_code	0xffff	Product code
config_path	-	Full path of Configuration profile

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rogue_onu	1	1(enable), 0(disable), 0x8000(occurred rogue one)
sfp_pps	0	PPS value, 0(disable), otherwise(enable)
sfp_tod	0	Time of Date, 0(disable), otherwise(enable)
sfp_los	8	Loss Of Signal, 0(disable), otherwise(enable)
sfp_mod_abs	6	Module absent, 0(disable), otherwise(enable)
stick_board	1	1(stick board), 0(EVM board)
inet	""	IP address
netmask	""	Netmask
mac_addr	-	Device MAC Address

Table. Environment variables

### • **printenv**

Display current settings.

```
ZXOS11NPI [/] # printenv
fwenv(130) stored at 0x40000, size 4096 bytes, region1 992 bytes, region2 3072 bytes
properties:
target_image=0
image0_addr=0x80000
image1_addr=0x580000
tc_type=1 (10G)
tx_split=1
random_delay=0 (use real random delay)
board_id=0xbd200003
reg_id=ZRMT6789bb02
sn_vsid=0x5a524d54(ZRMT)
sn_vssn=0x6789bb02
board_serial=0x5a524d546789bb02
board_revision=ZX300R03
equipment_id=ZXOS11NPI
vendor_product_code=0xffff
image0_version=XXSD__V0.81.9
image1_version=XXSD__V0.81.9
image0_product_code=ZXOS11NPI
image1_product_code=ZXOS11NPI
ptp_tod_trecv_fix=8430 nsec
config_path=/etc/xgspn_r2.xml
stick_board=0 (EV B/D)
timer_max_wait_allocid=600s
disable_ploam_deactivate=0
drop_big_omci_on_tx_split_0=0
prbs_mode=0
pon_serdes_clock_mode=0 (Dual)
rogue_onu=1
tx_power_off=0
inet=192.168.8.140
netmask=255.255.0.0
mac_addr=02:13:92:d2:8f:79
console_uart=0
tftp mode isn't supported in this f/w
sfp pins are following :
sfp_mod_abs(6) sfp_pps(9) sfp_sync_e(0)
sfp_tod(0) sfp_los(8) sfp_tx_fault(0) sfp_tx_disable(0)
sfp_rate_select_0(0) sfp_rate_select_1(0)
```

### • **getenv env\_name**

Read environment variables.

example. Read ID of running software image.

```
ZXOS11NPI [/] # getenv target_image
0
```

## XGSPON-STICK

---

- **setenv** *env\_name env\_value*

Set environment variable. This command set up the variable at temporary. This command saves environment variables temporarily. If you want to permanently save the changed configuration values, you need to run the **saveenv** command.

example. Change the firmware to be executed when rebooting.

**Caution] don't change value except** `reg_id`

```
ZXOS11NPI [/] # setenv target_image 1
target_image=1
```

- **saveenv**

Save the environment variable in flash memory.

```
ZXOS11NPI [/] # saveenv
config-save offset: 0x00040000(133)
done (494450 usec).
config-save offset: 0x00050000(134)
done (490591 usec).
env load from primary
env load area : 0x00050000
```

- **passwd -u user**

Change user's password(telnet and ssh common).

```
ONTUSER@ZXOS11NPI [/] # passwd -u ONTUSER
ONTUSER current password:
=== Password rule ===
1. at least 8 characters
2. not allowed to be the same as the userID
3. must contain combined characters
   => numeric, alpha characters

input new password:
re-input password:
00:00:59.472013 [LOGIN] user ONTUSER's password is changed.
```

If not exist user, show below text.

```
ONTUSER@ZXOS11NPI [/] # passwd -u user
Can't get pwd
```

### 15.3.2. Data access

- **zreg** *cpu\_name dir addr [value|length]*
  - cpu\_name : main, ethc or pon
  - dir : rd(read) or wr(write)
  - addr : target address (must be aligned by 4bytes)
  - value or length : value(in case of dir = wr), length(in case of dir = rd)read 32-bit register(or memory).

Example 1. Read 16byte data from 0x81000300 in main CPU.

```
ZXOS11NPI [/] # zreg main rd 0x81000300 4
```

```
[0x81000300] 00000000 00000000 ffffffff 00000000
```

Example 2. Write 0x00000001 in 0x81000300 of main CPU

```
ZXOS11NPI [/] # zreg main wr 0x81000300 0x00000001
```

```
WR [0x81000300] 0x00000001 & 0xffffffff SUCCESS!
```

#### **zdump omci** [ # | seq range ]

zdump omci #

- show total count of OMCI history

zdump omci -N

- Shows the last N list of OMCI history.

zdump omci N-M

- Shows a list of sequence numbers N to M in OMCI history.

```
ZXOS11NPI [/] # zdump omci #  
OMCI history total items#: 764
```

```
ZXOS11NPI [/] # zdump omci -10  
OMCI history (total #764 items):  
[ 754] 14854928 DS 4cb34c0a 00020000: 19635.Get all alarms next: ONU data(0002).0000: seq 90  
[ 755] 14855185 US 4cb32c0a 00020000: 19635.Get all alarms next: ONU data(0002).0000: cls  
MAC bridge port configuration data(002f) 0x110b  
[ 756] 14856910 DS 4cb44c0a 00020000: 19636.Get all alarms next: ONU data(0002).0000: seq 91  
[ 757] 14857171 US 4cb42c0a 00020000: 19636.Get all alarms next: ONU data(0002).0000: cls  
MAC bridge port configuration data(002f) 0x1103  
[ 758] 14858897 DS 4cb54c0a 00020000: 19637.Get all alarms next: ONU data(0002).0000: seq 92  
[ 759] 14859154 US 4cb52c0a 00020000: 19637.Get all alarms next: ONU data(0002).0000: cls  
MAC bridge port configuration data(002f) 0x1104  
[ 760] 14860884 DS 4cb64c0a 00020000: 19638.Get all alarms next: ONU data(0002).0000: seq 93  
[ 761] 14861147 US 4cb62c0a 00020000: 19638.Get all alarms next: ONU data(0002).0000: cls  
Time Status Message(01b8) 0x0000  
[ 762] 14862879 DS 4cb74c0a 00020000: 19639.Get all alarms next: ONU data(0002).0000: seq 94  
[ 763] 14863142 US 4cb72c0a 00020000: 19639.Get all alarms next: ONU data(0002).0000: cls  
System Management(00f0) 0x0000
```

```
ZXOS11NPI [/] # zdump omci 100-110  
OMCI history (total #764 items):  
[ 100] 13360894 DS 4b6c4e0a 00020000: 19308.MIB upload next: ONU data(0002).0000: seq 46  
[ 101] 13361135 US 4b6c2e0a 00020000: 19308.MIB upload next: ONU data(0002).0000: cls UNI-  
G(0108) 0xfffff  
[ 102] 13362786 DS 4b6d4e0a 00020000: 19309.MIB upload next: ONU data(0002).0000: seq 47  
[ 103] 13363031 US 4b6d2e0a 00020000: 19309.MIB upload next: ONU data(0002).0000: cls  
Priority Queue(0115) 0x0000  
[ 104] 13364890 DS 4b6e4e0a 00020000: 19310.MIB upload next: ONU data(0002).0000: seq 48  
[ 105] 13365135 US 4b6e2e0a 00020000: 19310.MIB upload next: ONU data(0002).0000: cls
```

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---

```
Priority Queue(0115) 0x0000
[ 106] 13366864 DS 4b6f4e0a 00020000: 19311.MIB upload next: ONU data(0002).0000: seq 49
[ 107] 13367112 US 4b6f2e0a 00020000: 19311.MIB upload next: ONU data(0002).0000: cls
Priority Queue(0115) 0x0001
[ 108] 13370319 DS 4b704e0a 00020000: 19312.MIB upload next: ONU data(0002).0000: seq 50
[ 109] 13370562 US 4b702e0a 00020000: 19312.MIB upload next: ONU data(0002).0000: cls
Priority Queue(0115) 0x0001
[ 110] 13371971 DS 4b714e0a 00020000: 19313.MIB upload next: ONU data(0002).0000: seq 51
```

**zdump omci type message\_type**  
message\_type : OMCI message type

```
ZXOS11NPI [/] # zdump omci type 13
OMCI history (total #766 items):
message type to filter: 13(MIB upload)
[ 6] 13255347 DS 4b3d4d0a 00020000: 19261.MIB upload: ONU data(0002).0000
[ 7] 13255606 US 4b3d2d0a 00020000: 19261.MIB upload: ONU data(0002).0000: next cmds# 222
matching message count: 2
```

```
ZXOS11NPI [/] # zdump omci type 9
OMCI history (total #766 items):
message type to filter: 9(Get)
[ 0] 12558103 DS 4b3a490a 00020000: 19258.Get: ONU data(0002).0000: mibDataSync
[ 1] 12558307 US 4b3a290a 00020000: 19258.Get: ONU data(0002).0000: result 00
[ 4] 13253345 DS 4b3c490a 00830000: 19260.Get: OLT-G(0083).0000: oltVendorId
[ 5] 13253544 US 4b3c290a 00830000: 19260.Get: OLT-G(0083).0000: result 00
[ 452] 13733708 DS 4c1c490a 011f0000: 19484.Get: Omci(011f).0000: meTypeTable
[ 453] 13733905 US 4c1c290a 011f0000: 19484.Get: Omci(011f).0000: result 00
matching message count: 6
```

### 15.3.3. ONU Management

● **onu show pon counter**

Show counter for gempport.

```
admin@ZXOS11NPI [/] # onu show pon counter
-----
T-CONT idx : 0 | Alloc-ID : 1026(0x0402)
-----
GEM idx | dir | GEM frames | GEM Payload bytes
-----
 001 | Rx | 0 | 0
0x0402 | Tx | 0 | 0
-----
Dir | total GEM frames | total GEM payload bytes
-----
Rx | 0 | 0
Tx | 0 | 0
-----
T-CONT idx : 1 | Alloc-ID : 1027(0x0403)
-----
GEM idx | dir | GEM frames | GEM Payload bytes
-----
 003 | Rx | 0 | 0
0x0403 | Tx | 0 | 0
-----
Dir | total GEM frames | total GEM payload bytes
-----
Rx | 0 | 0
Tx | 0 | 0
-----
T-CONT idx : 2 | Alloc-ID : 1028(0x0404)
-----
GEM idx | dir | GEM frames | GEM Payload bytes
-----
 004 | Rx | 0 | 0
0x0404 | Tx | 0 | 0
-----
Dir | total GEM frames | total GEM payload bytes
-----
Rx | 0 | 0
Tx | 0 | 0
-----
#####
Dir | total PON frames | total PON payload bytes
-----
Rx | 0 | 0
Tx | 0 | 0
#####
-----
PON Rx FEC statistic
-----
Corrected byte(8-byte) : 0
Corrected code wordsi(8-byte) : 0
Uncorrectable code words(8-byte) : 0
Total code words(8-byte) : 16528663237
-----
```

● **onu reset pon counter**

Clear gempport counter

## XGSPON-STICK

---

- **onu show qos tcont** [ idx | all | reg ]

idx : T-CONT index,

all : show all T-CONT index, which is available.

reg : Entering "reg" instead of "idx" shows register information.

Shows T-CONT configuration information of a specific index or register information of all configured T-CONTs and related register info.

```
ZXOS11NPI [/] # onu show qos tcont 0
```

```
-----  
T-CONT idx : 0 | Alloc-ID : 1047(0x0417)  
-----
```

```
Alloc-id : 1047(0x0417)  
policy : 0  
num_of_valid_pq_idx : 2  
num_of_spq_idx : 2  
num_of_removed : 0  
    [0] q_idx : 23(0x17), rm:0  
    [1] q_idx : 22(0x16), rm:0  
-----
```

```
ZXOS11NPI [/] # onu show qos tcont reg
```

```
-----  
T-CONT idx : 0 | Alloc-id : 1047(0x0417)  
-----
```

```
split[0] exe_ptr[0x0] wrp_ptr[0x0]  
wrp_start[0x10] list_cnt[2]
```

```
- Low LIST index is the highest priority  
  LIST_0(q_idx) : 22(0x16) -> GEM idx: 1, GEMPort ID : 1092(0x0444)  
  LIST_1(q_idx) : 23(0x17) -> GEM idx: 3, GEMPort ID : 1093(0x0445)  
-----
```

```
-----  
T-CONT idx : 1 | Alloc-id : 1044(0x0414)  
-----
```

```
split[0] exe_ptr[0x0] wrp_ptr[0x0]  
wrp_start[0x10] list_cnt[1]
```

```
- Low LIST index is the highest priority  
  LIST_0(q_idx) : 5(0x05) -> GEM idx: 4, GEMPort ID : 1094(0x0446)  
-----
```

```
-----  
T-CONT idx : 14 | Alloc-id : 12(0x000C)  
-----
```

```
split[0] exe_ptr[0x0] wrp_ptr[0x0]  
wrp_start[0x00] list_cnt[0]
```

```
- Low LIST index is the highest priority  
-----
```

```
-----  
T-CONT idx : 15 | Alloc-id : 1022(0x03FE)  
-----
```

```
split[0] exe_ptr[0x0] wrp_ptr[0x0]  
wrp_start[0x00] list_cnt[0]
```

```
- Low LIST index is the highest priority  
-----
```

- **onu show qos gempport** [ idx | all ]

idx : GEM port index,

all : show all T-CONT index, which is available.

Shows GEM port configuration information.



## XGSPON-STICK

```
ZXOS11NPI [/] # onu show qos gempport 1
```

```
-----  
GEM port idx : 1 | port ID : 1092(0x0444)  
-----
```

```
related tcont idx : 0  
related queue idx : 22  
-----
```

```
ZXOS11NPI [/] # onu show qos gempport all
```

```
-----  
GEM port idx : 0(0x0000) | port ID : 65534(0xFFFE)  
-----
```

```
related tcont idx : -  
related queue idx : -  
-----
```

```
GEM port idx : 1(0x0001) | port ID : 1092(0x0444)  
-----
```

```
related tcont idx : 0  
related queue idx : 22  
-----
```

```
GEM port idx : 2(0x0002) | port ID : 65533(0xFFFD)  
-----
```

```
related tcont idx : -  
related queue idx : -  
-----
```

```
GEM port idx : 3(0x0003) | port ID : 1093(0x0445)  
-----
```

```
related tcont idx : 0  
related queue idx : 23  
-----
```

```
GEM port idx : 4(0x0004) | port ID : 1094(0x0446)  
-----
```

```
related tcont idx : 1  
related queue idx : 5  
-----
```

### • **onu show qos queue** [ *idx* | *all* ]

- idx* : Queue index,
- all* : show all T-CONT index, which is available.

Shows queue configuration information of a specific index or register information of all configured queues.

```
ZXOS11NPI [/] # onu show qos queue 1
```

```
-----  
Queue idx : 1  
-----
```

```
related tcont idx : 22(0x0016)  
related gempport_id : 0(0x0000)  
omci-priority : -1  
policy : 3  
weight : 197700  
removed : 0  
-----
```

```
ZXOS11NPI [/] # onu show qos queue all
```

```
-----  
Queue idx : 0  
-----
```

```
related tcont idx : -1(0xFFFFFFFF)  
related gempport_id : -1(0xFFFFFFFF)  
omci-priority : -1  
policy : 2  
weight : 65534  
removed : 0  
-----
```

```
Queue idx : 1  
-----
```

## XGSPON-STICK

```
related tcont idx : 22(0x0016)
related gempport_id : 0(0x0000)
omci-priority : -1
policy : 3
weight : 197700
removed : 0
-----
Queue idx : 2
-----
related tcont idx : -1(0xFFFFFFFF)
related gempport_id : -1(0xFFFFFFFF)
omci-priority : -1
policy : 2
weight : 65533
removed : 0
-----
Queue idx : 3
-----
related tcont idx : 23(0x0017)
related gempport_id : 0(0x0000)
omci-priority : -1
policy : 3
weight : 197701
removed : 0
-----
Queue idx : 4
-----
related tcont idx : 5(0x0005)
related gempport_id : 1(0x0001)
omci-priority : -1
policy : 3
weight : 197702
removed : 0
```

### • onu show pq

It shows ME instance, GEM port id, T-CONT index, etc. related to priority queue.

```
ZXOS11NPI [/] # onu show pq
=====
Upstream priority queue mapping
PQ ME priority : 0 is highest
*inst-id: instance id
-----|-----|-----|-----|-----|-----|-----|-----|-----|
pq-buf |----- PQ ME -----| GEM port | T-CONT |----- T-CONT ME ----|--802.1p Mapper--
idx    | inst-id | priority | inst-id | index | inst-id | alloc-id | inst-id | index
-----|-----|-----|-----|-----|-----|-----|-----|-----|
14     | 0x8016 | 6        | 0x0444 | 0     | 0x8001 | 0x0426 | 0x1102 | 0
15     | 0x8017 | 7        | 0x0445 | 0     | 0x8001 | 0x0426 | 0x1103 | 1
5      | 0x8005 | 5        | 0x0446 | 1     | 0x8000 | 0x0414 | 0x1104 | 2
=====
```

### • onu show key info

It shows key exchange and encryption information.

```
ZXOS11NPI [/] # onu show key info
key change counter 1
omci key count 0
omci key now index 0
omci key index 0 276
omci key index 1 0
omci key index 2 0
omci key index 3 0
set ring key count 0
set ring key index 0
```

## XGSPON-STICK

```
alloc pq key count    0
alloc pq key index    0
latest key index      1
UNICAST KEY 1(buf)    52d63420 *****
UNICAST KEY 2(buf)    00000000 *****
UNICAST KEY 1(reg)    52d63420 *****
UNICAST KEY 2(reg)    00000000 *****
BROADCAST KEY 1(buf)  00000000 *****
BROADCAST KEY 2(buf)  00000000 *****
BROADCAST KEY 1(reg)  00000000 *****
BROADCAST KEY 2(reg)  00000000 *****
```

- **onu set loopback** [*enable/disable*] [*vid/all*]

For swap speed test

MAC swap loopback will be enabled/disabled via OLT-remote-debug-ME / remote-debug-via-ssh. Specific vlan or all vlan

Only perform the packet MAC swap on the packet received from the OLT. And send the packet after MAC swap only back to the OLT without touching packet such as vlan.

```
ZXOS11NPI [/] # onu set loopback enable all
ZXOS11NPI [/] # onu set loopback enable 100
ZXOS11NPI [/] # onu set loopback disable
loopback disable
```

- **tftp** *ip\_addr path/file\_name local\_path/file\_name*  
ip\_addr : IP Address of TFTP server  
R\_file\_name : Remote file name in TFTP server.  
L\_file\_name : Local file name

Get file from remote TFTP server.

```
ZXOS11NPI [/] # tftp 192.168.1.42 tjchoi/XGS/release/omcid.XXTD_1_V0.82.2 ./omcid.XXTD_1_V0.82.2
tftp: socket 25
tftp: total 897384 bytes received
tftp: saved to "./omcid.XXTD_1_V0.82.2"
file size: 897384 bytes
```

- **wflash** *file image\_address*  
file\_name : wrote file name  
image\_address : wrote address, (0x80000 or 0x580000)

write software image.

```
ZXOS11NPI [/] # wflash omcid.XXTD_1_V0.82.2 0x580000
file size: 897384 bytes
offset: 0x00580000
done.
```

## 15.3.4. L2 Switch Management

## XGSPON-STICK

### • switch show vlan <all>

Display VLAN configuration

No change : packet transparent

Push tag : add tag

Pop outer tag : remove outer tag

Untag: untag

Tag0/1: single tag

Outertag0/1, innertag1/0: double tag

```
admin@ZXOS11NPI [/] # switch show vlan
```

VI-	SID	FID	Member	Prio-	rity	Policy	Egress Tag(1)								
			Port	rity	Enable	Enable	P8	P7	P6	P5	P4	P3	P2	P1	P0
605	0	0	0-0000011	0	0	0	0	-	0	0	0	0	0	0	0
606	0	0	0-0000011	0	0	0	0	-	0	0	0	0	0	0	0
715	0	0	0-0000011	0	0	0	0	-	0	0	0	0	0	0	0
4095	0	0	0-0000011	0	0	0	0	-	0	0	0	0	0	0	0

1.Egress Tag :

0(no change), 1(Push Tag), 2(Pop Outer Tag), 3(Untag)

4(Tag 0), 5(Tag 1), 6(OuterTag:0, InnerTag:1), 7(OuterTag:1, InnerTag:0)

Total VLAN count : 4

### • switch show mac

Display mac address list which is learned.

```
ZXOS11NPI [/] # switch show mac
```

mac address	port	FID	aging time	attr
54:EE:75:90:DF:12	0-0000010	0	0	dynamic
74:D4:35:E4:BA:7A	0-0000010	0	0	dynamic
00:0B:6F:50:01:17	0-0000010	0	0	dynamic
30:9C:23:D9:70:89	0-0000010	0	0	dynamic
C8:F8:6D:C4:D3:43	0-0000001	0	6	dynamic
3C:97:0E:1A:21:7C	0-0000010	0	0	dynamic
00:25:90:E3:B3:FD	0-0000010	0	0	dynamic
00:07:70:C1:1E:A8	0-0000010	0	1	dynamic

Total mac count : 8

aging period : 115500

### • switch show mpon

Display queue index which is mapped to VLAN.

```
ZXOS11NPI [/] # switch show mpon
```

Port mapping:

```
=====
PORT enable MAP  p7 p6 p5 p4 p3 p2 p1 p0
-----
P0      0      -
P1      1      0 22 22 22 22 22 22 22
P8      0      -
=====
```

VLAN mapping:

```
=====
VID MAP  p7 p6 p5 p4 p3 p2 p1 p0
-----
605     0  22 22 22 22 22 22 22
606     1  23 23 23 23 23 23 23
715     2  13 13 13 13 13 13 13
=====
```

## XGSPON-STICK

### • switch show counter

Display frame counter of each port. This CLI is used for traffic debugging.

Port 0 : ANI-side

Port 1: UNI-side

port 8: CPU-side

Misc Packets

Pause : pause frame

Under : frame size is shorter than min length in pctrlb (switch show port ctrl)

Flag : Under & fcs err

Over : frame size is longer than frame size in pctrl0 (switch show port ctrl2)

Jabber : Over & fcs err

Error Packets

Rx : error is occur in phy level.

FCS : occur in phy level or duplex does not fit.

SOB/EOB : packet is broken.

Ready : Buffer storing packet is full

ZXOS11NPI [/] # switch show counter

```
=====
              PON-Rx      PON-Tx      UNI-Rx      UNI-Tx      CPU-Rx      CPU-Tx
-----
ucast          1652427      1652252      1652252      1652427         0         0
mcast           11         0         0         11         0         11
bcast           0         0         0         0         0         0
-----
0~64            0         0         0         0         0         0
65~127          11         0         0         11         0         11
128~255         0         0         0         0         0         0
256~511         0         0         0         0         0         0
512~1023        0         0         0         0         0         0
1024~          1652427      1652252      1652252      1652427         0         0
-----
Pause           0         0         0         0         0         0
Under           0         0         0         0         0         0
Over            0         0         0         0         0         0
Fragment        0         -         0         -         0         -
Jabber          0         -         0         -         0         -
-----
RX err          0         -         0         -         0         -
FCS err         0         -         0         -         0         -
SOB err         0         -         0         -         0         -
EOB err         0         -         0         -         0         -
RDY err         0         -         0         -         0         -
-----
good-byte      2478641292      2478378000      2478378000      2478641292         0         792
bad-byte        0         -         0         -         0         -
=====
DROP
=====
              rate-limit      PORT-MAP      DROP
-----
PON              0         0         0
UNI              0         0         0
=====
```

### • switch show counter-clear

Reset Port frame counters

ZXOS11NPI [/] # switch show counter-clear

### • switch show us counter [start/check]

## XGSPON-STICK

For Checking packet drop counters for upstream.

- 1) type "switch show us counter start"
- 2) type "switch show us counter check"

If negative value is increase continually, you can check there are packet drop.

```
ZXOS11NPI [/] # switch show us counter start
switch <-> gemport count start
+-----start count-----
| gemport TX      : 47067468
| switch p0 TX    : 47116429
| switch p1 RX    : 47120548
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:16970656] <-> ANI[tx:16970681]      : 25
| switch P1[rx:16970755] <-> P0[tx:16970656]      : -99
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:23257333] <-> ANI[tx:23263073]      : 5740
| switch P1[rx:23258683] <-> P0[tx:23257333]      : -1350
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:28562177] <-> ANI[tx:28568800]      : 6623
| switch P1[rx:28563593] <-> P0[tx:28562177]      : -1416
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:33666411] <-> ANI[tx:33670368]      : 3957
| switch P1[rx:33667374] <-> P0[tx:33666411]      : -963
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:39170035] <-> ANI[tx:39174052]      : 4017
| switch P1[rx:39171444] <-> P0[tx:39170035]      : -1409
+-----+
ZXOS11NPI [/] # switch show us counter check
switch <-> gemport count check
If negative value is increase continually, you can check there are packet drop.
+-----check count-----
| switch P0[tx:44869834] <-> ANI[tx:44875541]      : 5707
| switch P1[rx:44871309] <-> P0[tx:44869834]      : -1475
+-----+

```

### ● switch rule [0~6] [action] <value>

[action]	<value>	description
clear		Delete rule.
smac	[dis/val] Disable or AA:BB:CC:DD:EE:FF(MAC) XX:XX:XX:XX:XX:XX(MASK)	Compare source mac and if matched, perform action.
dmac	[dis/val] Disable or AA:BB:CC:DD:EE:FF(MAC) XX:XX:XX:XX:XX:XX(MASK)	Compare destination mac and if matched, perform action.
sip	[dis/val] Diabile or	Compare source ip and if matched, perform

## XGSPON-STICK

	A.B.C.D(IP) X.X.X.X(MASK)	action.
dip	<i>[dis/val]</i> Diabile or A.B.C.D(IP) X.X.X.X(MASK)	Compare destination ip and if matched, perform action.
sport	<i>[dis/val]</i> Disable or <0-65535>	Compare source port and if matched, perform action.
dport	<i>[dis/val]</i> Disable or <0-65535>	Compare destination port and if matched, perform action.
vlan	<i>[dis/val]</i> Disable or <1-4094>	Compare vlan and if matched, perform action.
protocol	<i>[dis/val]</i> Disable or <0-255>	Compare protocol and if matched, perform action.
ethertype	<i>[dis/val]</i> Disable or <0-65535<(ethertype) <0-65535>(MASK)	Compare ethertype and if matched, perform action.
interface	[pon cpu uni] [en dis]	Compare input port and if matched, perform action.
action drop	<i>[en/dis]</i>	Matched packets are dropped.
action counter	<i>[en/dis]</i>	Matched packets can be counted. It can also be found in the CLI show apply.
show		Display CLI "apply and profile"
show apply		Display compare rule.
show profile		Display action rule.
apply		It is necessary to apply the rules.

Procedure for applying rules.

1) Set compare(match) rule you want. (smac ~ interface)

```
ZXOS11NPI [/] # switch rule 1 smac 00:0b:6f:aa:00:02 ff:ff:ff:ff:Ff:ff
smac: 00:0b:6f:aa:00:02 mask: ff:ff:ff:ff:Ff:ff
ZXOS11NPI [/] # switch rule 1 dmac 00:0b:6f:aa:00:03 ff:ff:ff:ff:Ff:ff
dmac: 00:0b:6f:aa:00:03 mask: ff:ff:ff:ff:Ff:ff
ZXOS11NPI [/] # switch rule 1 sport 80
sport: 80
ZXOS11NPI [/] # switch rule 1 dport 23
dport: 23
ZXOS11NPI [/] # switch rule 1 vlan 100
vlan: 100, mask: 4095
ZXOS11NPI [/] # switch rule 1 protocol 1
protocol: 1, mask: 1
ZXOS11NPI [/] # switch rule 1 ethertype 2048 65535
ethertype: 0x800, mask: 0xffff
ZXOS11NPI [/] # switch rule 9 interface uni en
interface port: 1 enable: 1, uni en
ZXOS11NPI [/] # switch rule 1 interface pon en
interface port: 0 enable: 1, pon en
```

2) Set action rule. (drop/counter)

```
ZXOS11NPI [/] # switch rule 1 action counter en
counter enable
ZXOS11NPI [/] # switch rule 1 action drop en
drop enable
```

3) Apply the rule.

```
ZXOS11NPI [/] # switch rule 1 apply
00:12:35.401222 [ETH] ACL Add Success: 1
```

## XGSPON-STICK

---

### 4) Check the rule.

Packets where Smac is 00:0B:6F:AA:00:02, dmac is 00:0B:6F:AA:00:03, src port is 80, dport is 23, vlan id is 100, ethertype is 2048(0x0800), protocol is 1 and input port is uni or pon(ani) are dropped and counted.

```
ZXOS11NPI [/] # switch rule 1 show
[Profile Rule]
INDEX: 1
smac - 00:0B:6F:AA:00:02
smask - FF:FF:FF:FF:FF:FF
dmac - 00:0B:6F:AA:00:03
dmask - FF:FF:FF:FF:FF:FF
src port: 80
dst port: 23
vlan id: 100, mask: 4095
ethertype: 2048, mask: 65535
protocol: 1, mask: 1
inputport: pon, uni
Action
drop: enable
count: enable

[Applied Rule]
INDEX: 1
rule index: 11 vid: 100 vid_mask: 0xfff
rule index: 1 etype: 0x0800 mask: 0xffff
rule index: 1 sport: 80 mode:0 (0:exact match, 1: not match 2: equal or great, 3: equal or less)
rule index: 2 dport: 23 mode:0 (0:exact match, 1: not match 2: equal or great, 3: equal or less)
rule index: 7 smac: 00:0b:6f:aa:00:02 mask: ff:ff:ff:ff:ff:ff
rule index: 8 dmac: 00:0b:6f:aa:00:03 mask: ff:ff:ff:ff:ff:ff
inputport: pon, uni
protocol: 0x01
Action
Drop: enable
Count: enable
Count: 0
```

### 5) delete the rule.

```
admin@ZXOS11NPI [/] # switch rule 1 clear
admin@ZXOS11NPI [/] # switch rule 1 apply
00:25:54.493698 [ETH] ACL Add Success: 1
```

### • switch rule entry

switch rule entry : display applied filter/counter list all.

```
ZXOS11NPI [/] # switch rule entry
INDEX[8] acl entry is exist
etype_match
dport_match
dmac_match
INDEX[9] acl entry is exist
etype_match
dport_match
dmac_match
```

### • switch show acl entry <#idx>

This CLI shows action of rule about specific packet. (matching condition)

```
ZXOS11NPI [/] # switch show acl entry
INDEX[52] acl entry is exist
vid_match
INDEX[53] acl entry is exist
vid_match
```



## XGSPON-STICK

```
INDEX[76] acl entry is exist
  etype_match
  dmac_match
INDEX[97] acl entry is exist
  dmac_match
INDEX[100] acl entry is exist
  dmac_match
INDEX[101] acl entry is exist
  dmac_match
INDEX[102] acl entry is exist
INDEX[103] acl entry is exist
INDEX[104] acl entry is exist
INDEX[105] acl entry is exist
  dmac_match
INDEX[106] acl entry is exist
  dip_match
INDEX[107] acl entry is exist
  dmac_match
INDEX[110] acl entry is exist
  etype_match
  dmac_match
INDEX[111] acl entry is exist
  etype_match
  dmac_match
INDEX[112] acl entry is exist
  etype_match
  dport_match
  dmac_match
INDEX[113] acl entry is exist
  etype_match
  dmac_match
INDEX[114] acl entry is exist
  etype_match
  dport_match
  dmac_match
INDEX[115] acl entry is exist
  etype_match
  dmac_match
INDEX[125] acl entry is exist
  smac_match
INDEX[126] acl entry is exist
  smac_match
INDEX[127] acl entry is exist
  smac_match

ZXOS11NPI [/] # switch show acl entry 52
INDEX: 52
rule index: 9 vid: 10 vid_mask: 0xffff
inputport: 10000000
ip_type: 0x4(0b: ipv4 broad 1b:ipv6 multi 2b:ipv4 multi 3b:not multi not broad)
mac_type: 0x0(0b: broad 1b:multi 2b:uni)
fragment: 0x0(0b:fragmented 1b:1st fragment 2b:unfragmented)
vlan tag: 0x0(0b:tag 1b:pri tag 2b:untag)
llc: 0x0(0b:else 1b: LLC_SNAP 2b:LLC)
mpls: 0x0(0b:not valid 1b:valid)
ip_ver: 0x0(0b:else 1b:ipv6 2b:ipv4)
etc_dhcp: 0x0
etc_ipv6: 0x0(0b:ND 1b:MLD)
etc_icmp: 0x00
etc_igmp: 0x0
protocol: 0x00 protocol_mask: 0x0
tcpflag: 0x000 tcpflag_mask: 0x000

ACL_COUNT: 0
```

- **switch show acl action <#idx>**

This CLI shows action of rule about specific packet. (result action)





## XGSPON-STICK

```
| PORT_PRI   :      0 |
| PORT_VID   :    4095 |
| PORT_FID   :      0 |
+=====+
```

### ● switch show acl tpid

Display registered TPID table. You can check the TPID by checking the index with the number of TPID\_SEL0/1 of "switch show ctrl".

```
ZXOS11NPI [/] # switch show acl tpid
Ingress Port ACL VLAN CODE Info (tpid) : vlan tag lookup-engine
-----
port  TYPE0 (outer)  TYPE1 (inner)
-----
0     0x8100          0x8100
0     0x9100          0x9100
0     0x88A8          0x88A8
0     Disabled      Disabled
0     Disabled      Disabled
0     Disabled      Disabled
0     Disabled      Disabled
0     Disabled      Disabled
-----
1     0x8100          0x8100
1     0x9100          0x9100
1     0x88A8          0x88A8
1     Disabled      Disabled
1     Disabled      Disabled
1     Disabled      Disabled
1     Disabled      Disabled
1     Disabled      Disabled
-----
8     0x8100          0x8100
8     0x9100          0x9100
8     0x88A8          0x88A8
8     Disabled      Disabled
8     Disabled      Disabled
8     Disabled      Disabled
8     Disabled      Disabled
8     Disabled      Disabled
-----
```

### ● switch show acl vid-change

Display changed VLAN.

```
ZXOS11NPI [/] # switch show acl vid-change
VID Change Before(ingress) rule info
-----
idx   port_map(0~8)  in/outer  VID(before)  VID(after)
-----
0     100000000      Outer     200          0
-----
rule count : 1
```

### ● switch show port vid-change

Display changed VLAN.

```
ZXOS11NPI [/] # switch show port vid-change
VID Change After(egress) rule info
-----
idx   port_map(0~8)  in/outer  VID(before)  VID(after)
-----
0     100000000      Outer     0            200
-----
rule count : 1
```

## XGSPON-STICK

---

- **switch show port status**

Display port activation status.

Port 0 is pon serdes, port 1 is ethernet serdes and port 8 is cpu side. (2~6 is not used)

```
ZXOS11NPI [/] # switch show port status
=====
PORT | PORT_STATE
-----+-----
0    | Enable
1    | Enable
8    | Enable
=====
```

- **switch show sfp**

Display gpio pin status.

```
ZXOS11NPI [/] # switch show sfp
=====SFP INFO=====
      MOD_ABS | 0
      LOS     | 0
      TX_PWN  | 0
=====
```

- **switch serdes info**

Display gpio pin status.

If value is under 0x38(Bad), please replug optical line or reboot XGSPON.

```
ZXOS11NPI [/] # switch serdes info
=====
SWITCH ETH Serdes state
-----
serdes state | Very Good(0x3e)
=====
```

- **mcast showg**

Display the group joined to the multicast.

```
ZXOS11NPI [/] # mcast showg
- igmp-state : enabled
- query-timeout : 260
- immediate_leave_ : 1
-----
- group : 239.1.1.1 static:0,staticport:0x0,rowkey:0x0
vid:3000 p:1 80:00:02:c0:f2:84 192.85.1.50
```

- **mcast log [ en | dis ]**

You can see igmp-related packets coming into the CPU. You can turn on and off with En/dis

```
ZXOS11NPI [/] # mcast log en
_print_dsatag from :: EthcIgmpFrameHeaderCheck
ipport:1, nest_vid:0, tag1_info:4, tag2_info:0, vid0:3000, vid1:4095 prio0:0, pri1:0
oport-mask:256, damc:1, cup_tag:0, eg_valn_tag:0, ip_mcast:0, portid:0, nrl:0, mgmt:0
!! received-packet TAG_PACKET tpid:0x8100, vid:3000, cfi:0, priority:0
Packet received : len:68
EthcIgmpFrameProc called. type=23 igmplen=8
_get_vid_from_tag called
IgmpDsaTagFromCpu succ:1, sport:1, dport:0, o_tagged:tag, opri:0, ovid:3000
_get_vid_from_tag IgmpDsaTagFromCpu vid:3000
EthcIgmpGroupHostFind called. vid=3000 addr=239.1.1.1 smac=80:00:02:c0:f2:84
EthcIgmpGroupHostFind exited. error 0 group 0x4092c760 host 0x4092c7d8 join 0x4092c850
EthcIgmpGroupDelete called. vid =3000 addr=239.1.1.1 sport=1 smac=80:00:02:c0:f2:84
sip=192.85.1.50
IgmpDsaTagFromCpu succ:1, sport:1, dport:0, o_tagged:tag, opri:0, ovid:3000
IgmpFrameForward : len:72
_print_dsatag from :: IgmpFrameForward
ipport:1, nest_vid:0, tag1_info:0, tag2_info:0, vid0:3000, vid1:0 prio0:0, pri1:0
```

## XGSPON-STICK

```
oport-mask:1, damc:0, cup_tag:1, eg_valn_tag:0, ip_mcast:0, portid:0, nrl:0, mgmt:0
```

- **mcast packetlog** [ *en* | *dis* ]

Display the packets coming into the CPU. You can turn on and off with En/dis.

```
ZXOS11NPI [/] # mcast packetlog en
packet Received <-- : len:68
18000804 00bb8fff 01005e01 01018000 02c0f284 81000bb8 080046c0 0020b58f 00000102 bcfec055
0132ef01 01019404 00001600 f9fcef01 01010000 00000000 00000000
```

### 15.3.5. OMCI Management

- **showme**

Display list of created ME instance.

The format of each entry is as follows.

<class\_id> <ME-name> (#<instance\_count>) <instance\_id list ... >

```
ZXOS11NPI [/] # showme
 2 ONU data (#1): 0000
 5 Cardholder (#2): 0180 0101
 6 Circuit pack (#2): 0180 0101
 7 Software image (#3): 0000 0001 ffff
11 PPTP Ethernet UNI (#1): 0101
131 OLT-G (#1): 0000
134 IP host config data (#1): 0000
256 ONU-G (#1): 0000
257 ONU2-G (#1): 0000
441 ONU3-G (#1): 0000
262 T-CONT (#8): 8000 8001 8002 8003 8004 8005 8006 8007
263 ANI-G (#1): 0000
264 UNI-G (#1): ffff
277 Priority Queue (#73): 0000 0001 0002 0003 0004 0005 0006 0007 0070 8000 8001 8002 8003
8004 8005 8006
                               8007 8010 8011 8012 8013 8014 8015 8016 8017 8020 8021 8022 8023 8024
8025 8026
                               8027 8030 8031 8032 8033 8034 8035 8036 8037 8040 8041 8042 8043 8044
8045 8046
                               8047 8050 8051 8052 8053 8054 8055 8056 8057 8060 8061 8062 8063 8064
8065 8066
                               8067 8070 8071 8072 8073 8074 8075 8076 8077
278 Traffic scheduler (#8): 8000 8001 8002 8003 8004 8005 8006 8007
329 VEIP (#1): ff01
332 Enhanced security control (#1): 0000
336 ONU Dynamic Power Management Control (#1): 0000
272 GAL Ethernet profile (#1): 0001
268 GEM port network CTP (#5): fffe 044e fffd 044f 0450
266 GEM IW TP (#4): 044e fffd 044f 0450
281 Multicast GEM IW TP (#1): 0001
46 MAC bridge configuration data (#1): 0101
48 MAC bridge port designation data (#5): 0101 1102 110b 1103 1104
49 MAC bridge port filter table data (#5): 0101 1102 110b 1103 1104
79 MAC bridge port filter pre-assign table (#5): 0101 1102 110b 1103 1104
50 MAC bridge port bridge table data (#5): 0101 1102 110b 1103 1104
130 IEEE 802.1p mapper service profile (#3): 1102 1103 1104
84 VLAN tagging filter data (#4): 1102 110b 1103 1104
171 Extended VLAN tagging operation configuration data (#1): 0101
309 Multicast operations profile (#1): 0101
310 Multicast subscriber config info (#1): 0101
311 Multicast subscriber monitor (#1): 0101
47 MAC bridge port configuration data (#5): 0101 1102 110b 1103 1104
45 MAC bridge service profile (#1): 0101
287 Omci (#1): 0000
440 Time Status Message (#1): 0000
457 ONU Time Configuration (#1): 0000
240 System Management (#1): 0000
```

## XGSPON-STICK

---

### • **showme** *class\_id* \*

Shows all instances of ME corresponding to the specified *class\_id*.

```
ZXOS11NPI [/] # showme 5 *
5 Cardholder instances#2:

5 Cardholder.0180:
  actualPluginUnitType: 238
  expectedPluginUnitType: 238
  expectedePortCount: 0
  expectedEquipmentId:
  actualEquipmentId:
  protectionProfilePointer: 0
  invokeProtectionSwitch: 0
  arc: 0
  arcInterval: 0

5 Cardholder.0101:
  actualPluginUnitType: 49
  expectedPluginUnitType: 49
  expectedePortCount: 0
  expectedEquipmentId:
  actualEquipmentId:
  protectionProfilePointer: 0
  invokeProtectionSwitch: 0
  arc: 0
  arcInterval: 0
```

### **showme** *class\_id instance\_id* <*max\_depth*>

Shows the attribute value of ME instance corresponding to the designated *class\_id* and *instance\_id*.

When an instance has another instance pointer as an attribute, the information of the instance corresponding to the connected instance pointer according to the *max\_depth* value is displayed. Same as 1 if *max\_depth* is not specified

```
ZXOS11NPI [/] # showme 262 0x8000
262 T-CONT.8000:
  allocId: 0x045b(1115)
  policy: 1(strict)
  GEM ports#2
    GEM port network CTP.044e port id 0x044e
    GEM port network CTP.044f port id 0x044f
  Priority queues#8
    Priority Queue.8000 idx 9 GEM ports#0
    Priority Queue.8001 idx 10 GEM ports#0
    Priority Queue.8002 idx 11 GEM ports#0
    Priority Queue.8003 idx 12 GEM ports#0
    Priority Queue.8004 idx 13 GEM ports#0
    Priority Queue.8005 idx 14 GEM ports#0
    Priority Queue.8006 idx 15 GEM ports#1
    Priority Queue.8007 idx 16 GEM ports#1
```

```
ZXOS11NPI [/] # showme 262 0x8000 1
262 T-CONT.8000:
  allocId: 0x045b(1115)
  policy: 1(strict)
  GEM ports#2
    GEM port network CTP.044e port id 0x044e
    GEM port network CTP.044f port id 0x044f
  Priority queues#8
    Priority Queue.8000 idx 9 GEM ports#0
    Priority Queue.8001 idx 10 GEM ports#0
    Priority Queue.8002 idx 11 GEM ports#0
    Priority Queue.8003 idx 12 GEM ports#0
    Priority Queue.8004 idx 13 GEM ports#0
    Priority Queue.8005 idx 14 GEM ports#0
    Priority Queue.8006 idx 15 GEM ports#1
```

## XGSPON-STICK

```
Priority Queue.8007 idx 16 GEM ports#1
ZXOS11NPI [/] # showme 262 0x8000 2
262 T-CONT.8000:
  allocId: 0x045b(1115)
  policy: 1(strict)
  GEM ports#2
    GEM port network CTP.044e port id 0x044e
    268 GEM port network CTP.044e:
      portID: 0x044e(1102)
      t-cont: T-CONT(262).8000
      direction: 3(us+ds)
      upstream priority queue(t-cont): Priority Queue(277).8006
      upstream traffic descriptor: 0x0000
      uniCounter: 0
      downstream priority queue: Priority Queue(277).0000
      encryptionState: 0(unencrypted)
      downstream traffic descriptor: 0x0000
      encryptionKeyRing: 0(no encryption)
    GEM port network CTP.044f port id 0x044f
    268 GEM port network CTP.044f:
      portID: 0x044f(1103)
      t-cont: T-CONT(262).8000
      direction: 3(us+ds)
      upstream priority queue(t-cont): Priority Queue(277).8007
      upstream traffic descriptor: 0x0000
      uniCounter: 0
      downstream priority queue: Priority Queue(277).0000
      encryptionState: 0(unencrypted)
      downstream traffic descriptor: 0x0000
      encryptionKeyRing: 0(no encryption)
  Priority queues#8
    Priority Queue.8000 idx 9 GEM ports#0
    277 Priority Queue.8000:
      queueConfigurationOption: 1(share)
      maximumQueueSize: 1048560 bytes (scale factor 48)
      allocatedQueueSize: 1048560 bytes (scale factor 48)
      discardBlkCntrRstInterval: 0 msec
      thrForDiscardedBlksBufOvf: 0 bytes
      relatedPort: T-CONT(262).8000 (priority 0)
      trafficSchedulerPointer: 0x0000
      weight: 0
      backPressureOperation: 0(enabled)
      backPressureTime: 0 usec
      backPressureOccurQThr: 0 bytes
      backPressureClearQThr: 0 bytes
      packetDropQueueThresholds: green [65520, 131088], yellow [32736, 65520) bytes
      packetDropMaxP: green %g, yellow %g
      queueDropWQ: %g
      dropPrecedenceClearMark: 0
    Priority Queue.8001 idx 10 GEM ports#0
    277 Priority Queue.8001:
      queueConfigurationOption: 1(share)
      maximumQueueSize: 1048560 bytes (scale factor 48)
      allocatedQueueSize: 1048560 bytes (scale factor 48)
      discardBlkCntrRstInterval: 0 msec
      thrForDiscardedBlksBufOvf: 0 bytes
      relatedPort: T-CONT(262).8000 (priority 1)
      trafficSchedulerPointer: 0x0000
      weight: 0
      backPressureOperation: 0(enabled)
      backPressureTime: 0 usec
      backPressureOccurQThr: 0 bytes
      backPressureClearQThr: 0 bytes
      packetDropQueueThresholds: green [65520, 131088), yellow [32736, 65520) bytes
      packetDropMaxP: green %g, yellow %g
      queueDropWQ: %g
      dropPrecedenceClearMark: 0
```



## XGSPON-STICK

```
. . .  
  
Priority Queue.8007 idx 16 GEM ports#1  
 277 Priority Queue.8007:  
   queueConfigurationOption: 1(share)  
   maximumQueueSize: 1048560 bytes (scale factor 48)  
   allocatedQueueSize: 1048560 bytes (scale factor 48)  
   discardBlkCntrRstInterval: 0 msec  
   thrForDiscardedBlksBufOvf: 0 bytes  
   relatedPort: T-CONT(262).8000 (priority 7)  
   trafficSchedulerPointer: 0x0000  
   weight: 0  
   backPressureOperation: 0(enabled)  
   backPressureTime: 0 usec  
   backPressureOccurQThr: 0 bytes  
   backPressureClearQThr: 0 bytes  
   packetDropQueueThresholds: green [65520, 131088), yellow [32736, 65520) bytes  
   packetDropMaxP: green %g, yellow %g  
   queueDropWQ: %g  
   dropPrecedenceClearMark: 0
```

**omci setattr** *class\_id instance\_id attribute\_idx attribute\_value*  
*attribute\_idx*: Attribute index in the designated ME  
*attribute\_value*: attribute value. format depends on specified attribute

```
ZXOS11NPI [/] # showme 256 0  
256 ONU-G.0000:  
  vendorId: ZRMT  
  version: ZX300R03  
  serial: 0x5a524d5467590044  
  trafficManagementOption: 0  
  deprecated: 0  
  batteryBackup: 0  
  administrativeState: 0  
  operationalState: 1  
  onuSurvivalTime: 0  
  logicalOnuId:  
  logicalPassword:  
  credentialsStatus: 0  
  extendedTcLayerOptions: 0x0000  
ZXOS11NPI [/] # omci setattr 256 0 0 "ABCD"  
write: ONU-G.0000.0(vendorId) 4 bytes  
ZXOS11NPI [/] # showme 256 0  
256 ONU-G.0000:  
  vendorId: ABCD  
  version: ZX300R03  
  serial: 0x5a524d5467590044  
  trafficManagementOption: 0  
  deprecated: 0  
  batteryBackup: 0  
  administrativeState: 0  
  operationalState: 1  
  onuSurvivalTime: 0  
  logicalOnuId:  
  logicalPassword:  
  credentialsStatus: 0  
  extendedTcLayerOptions: 0x0000
```

**alarm** *class\_id instance\_id alarm\_idx* [1|0]  
Generate or clear the specific alarm.

```
ZXOS11NPI [/] # alarm 256 0x0000 7 1  
ONU-G.0000 alarm<7> set notified ok  
  
ZXOS11NPI [/] # alarm 256 0x0000 7 0  
ONU-G.0000 alarm<7> clear notified ok
```



## XGSPON-STICK

```

00000000 00 00 10 10 22 20 20 00 00 04 45 51 44 20 05 42 ... " ...EQD .B
00000010 00 80 81 80 0a 2a 80 0a 00 00 00 00 00 82 49 00 ....*. ....I.
00000020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000040 00 00 00 00 13 80 00 00 00 00 00 00 00 00 00 .....
00000050 01 00 00 00 01 00 00 00 01 00 00 00 00 00 00 10 .....
00000060 00 00 58 01 90 80 00 00 00 00 09 64 24 10 00 00 .X.....d$.
00000070 a8 00 00 00 04 40 00 00 00 00 00 00 00 00 00 82 ...@.....
00000080 00 00 15 60 78 00 00 02 00 00 40 70 40 40 80 20 ..`x.....@p@@.
00000090 54 08 20 00 00 98 a0 00 10 00 00 01 00 00 08 04 .....
000000a0 20 05 00 00 00 02 00 00 12 00 00 30 00 00 00 .....0...
000000b0 00 00 00 00 00 00 00 01 00 00 40 00 00 41 00 .....@..A.
000000c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
000000d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
000000e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
000000f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

```

ZXOS11NPI [/] # sfp dump 2

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```

00000000 03 04 01 20 00 00 00 00 00 00 00 06 41 00 00 00 .. .....A...
00000010 00 00 00 00 52 60 50 32 09 00 00 20 00 00 00 00 ...R`P2... ..
00000020 20 20 20 20 00 00 03 24 12 14 48 05 40 40 10 40 ...$.H.@.@.
00000030 0c 48 05 52 50 48 00 03 31 02 20 20 04 04 00 28 H.RPH..1. ...
00000040 00 10 00 00 00 12 30 10 30 20 02 10 20 20 30 30 .....0.0 .. 00
00000050 32 20 00 00 02 20 00 30 20 23 00 00 00 c0 00 86 ... .0 #.....
00000060 86 48 5d 9e a8 17 a1 c3 36 0c a4 9b 0b 81 be 09 H].....6.....
00000070 3d d1 5f 3c 87 0e 7a a1 fd d7 ea 6b 5b 35 89 00 .<..z....k[5..
00000080 00 ca 66 ad 4d 8d 08 61 be 6f ba c8 e1 85 a8 67 .f.M..a.o.....g
00000090 db ff bc f5 fa 86 4e 46 9d 05 3a 55 3a 92 0f 58 .....NF.:U:..X
000000a0 fc 61 61 be 92 f3 9b e7 62 af bc d5 8d 8e 0e 1f aa.....b.....
000000b0 7b c9 55 86 a2 3b b8 64 9e 2a fb 73 1c 2c ab b0 .U.;.d.*.s.,.
000000c0 75 5f 7d 31 4a cb da 28 e1 cd ad 73 7d 1d b5 57 _}1J..(...}.W
000000d0 f3 bf 4e d0 77 59 55 17 9a 9e 2b f4 d2 51 88 94 .N.wYU...+.Q..
000000e0 b0 bb 77 b6 45 0c 11 78 4f f8 3a d6 89 40 40 16 .w.E..xO.:..@@.
000000f0 99 89 b3 67 57 34 46 ac 2f b9 e0 9b 57 00 20 6a ..gW4F./...W. j

```

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```

00000000 00 00 10 10 22 20 20 00 00 04 45 51 44 20 05 42 ... " ...EQD .B
00000010 00 80 81 80 0a 2a 80 0a 00 00 00 00 00 82 49 00 ....*. ....I.
00000020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000040 00 00 00 00 13 80 00 00 00 00 00 00 00 00 00 .....
00000050 01 00 00 00 01 00 00 00 01 00 00 00 00 00 00 10 .....
00000060 00 00 58 01 90 80 00 00 00 00 09 64 24 10 00 00 .X.....d$.
00000070 a8 00 00 00 04 40 00 00 00 00 00 00 00 00 00 80 ...@.....
00000080 e1 1e 00 00 90 02 18 00 10 1f 00 01 5e 0a 4e 00 .....^..N.
00000090 00 00 00 00 1a aa 06 14 bf 70 aa 18 10 58 02 d0 .....p...X..
000000a0 06 06 01 00 00 18 1a 6d c9 20 20 35 3a 12 00 00 .....m. 5:...
000000b0 00 80 00 00 50 00 7e 62 68 7f 7f 54 aa 44 40 40 ...P.~bh..T.D@@
000000c0 28 83 00 00 00 00 ff ff 00 41 10 00 50 40 3b 00 .....A..P@;.
000000d0 ff ff ff f0 00 7f 81 50 20 78 64 01 00 00 00 00 .....P xd.....
000000e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
000000f0 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

```

### • sfp sn

Display serial number of Laser driver.

ZXOS11NPI [/] # sfp sn

vendor sn read success

Vendor SN : "OB181910210009 "

### • sfp rd page table\_id offset length

Read Laser driver IC.

page : 0 or 1 (page A0 or A2)

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---

table\_id : 0, 2, 3, 4 or (0, 0x80, 0x81, 0x82)  
offset : 0x00 ~ 0xff  
length : 0x01 ~ 0xff (offset +length ≤ 0x100)

Example. Read page(1), table\_id(0x80), offset(0x80), length(0x10)

```
ZXOS11NPI [/] # sfp rd 1 0x80 0x80 0x10
Page1 Table128 0x80, 16 bytes:
00000080 d7 1e 00 00 90 02 18 00 10 1f 00 01 5e 0a 4e 00 .....^N.
```

- **sfp wr page table\_id offset length da**  
Write Laser driver IC.

Example. Write page(1), table\_id(0x80), offset(0x88), length(1), data(0x10)

```
ZXOS11NPI [/] # sfp wr 1 0x80 0x88 1 0x10
00000088 10 .
Verifying page1 table128, 0x88, 0x01:
00000088 10 .
```

- **tx\_state <0|1>**  
Enable/disable optical Tx.

0: disable  
1: enable

## 15.3.7. Troubleshooting Management

- **log show dbg\_level**  
Display debugging level of the each modules.

```
ZXOS11NPI [/] # log show dbg_level
-----
level : 0(OFF), 1(FTL), 2(ERR), 3(WRN), 4(INF), 5(VRB)
OMCI : 5
PON : 3
ETH : 3
SFP : 5
PTP : 5
SYNCE : 5
ONU : 3
LOGIN : 3
-----
```

- **log set dbg\_level [dbg\_level] [module .../all]**  
[dbg\_level] : debugging level  
[module] : module to be applied. if insert 'all', it applies to all modules.  
Configure debugging level of the module.

```
ZXOS11NPI [/] # log set dbg_level 3 PON ETH
MODULE(ETH) => dbg level (3)
MODULE(PON) => dbg level (3)
ZXOS11NPI [/] # log show dbg_level
-----
level : 0(OFF), 1(FTL), 2(ERR), 3(WRN), 4(INF), 5(VRB)
OMCI : 5
PON : 3
ETH : 3
SFP : 5
PTP : 5
SYNCE : 5
ONU : 3
```

## XGSPON-STICK

```
LOGIN : 3
```

```
ZXOS11NPI [/] # log set dbg_level 2 all
-----
level : 0(OFF), 1(FTL), 2(ERR), 3(WRN), 4(INF), 5(VRB)
OMCI : 2
PON : 2
ETH : 2
SFP : 2
PTP : 2
SYNCE : 2
ONU : 2
LOGIN : 2
-----
```

### • log save dbg\_level <factory>

save all debugging level of modules.

```
ZXOS11NPI [/] # log show dbg_level
-----
level : 0(OFF), 1(EMR), 2(ERR), 3(WRN), 4(INF), 5(PRN)
OMCI : 2
PON : 2
ETH : 2
SFP : 2
PTP : 2
SYNCE : 2
ONU : 2
LOGIN : 2
-----
```

```
ZXOS11NPI [/] # log save dbg_level
OMCI:(2) PON:(2) ETH:(2) SFP:(2) PTP:(2) SYNCE:(2)
config-save offset: 0x00040000(23989)
done (675935 usec).
config-save offset: 0x00050000(23990)
done (677366 usec).
```

```
ZXOS11NPI [/] # getenv mod_dbg_lvl
OMCI(level=2) PON(level=2) ETH(level=2) SFP(level=2) PTP(level=2) SYNCE(level=2)
```

factory reset debug level and save them to flash.

```
ZXOS11NPI [/] # log save dbg_level factory
OMCI:(2) PON:(2) ETH:(2) SFP:(2) PTP:(2) SYNCE:(2)
config-save offset: 0x00040000(23989)
done (675935 usec).
config-save offset: 0x00050000(23990)
done (677366 usec).
```

### • log show mod [module ...] <flash>

<module> : module to be applied

flash : (optional) show log from flash, if not entered it is taken from RAM filesystem.

Display log of the specific modules

```
ZXOS11NPI [/] # log show mod PON
file : /mnt/log_0.txt
00:03:57.192380 [PON] pon_deactivate(10) !!
00:03:57.897428 [PON] pon_deactivate(3) !!
```

```
ZXOS11NPI [/] # log show mod OMCI
file : /mnt/log_0.txt
00:00:04.510154 [OMCI] sfp state changed to on(1).
```

## XGSPON-STICK

---

- **log show line** [*begin #|end #|all*] <flash>

begin # : The number of lines to be output from the beginning of the file.

end # : The number of lines to be output from the end of the file

flash : (optional) show log from flash, if not entered it is taken from RAM filesystem.

```
ZXOS11NPI [/] # log show line all
file : /mnt/log_0.txt
00:00:04.510154 [OMCI] sfp state changed to on(1).
00:00:04.930275 [PON] sync 0x0000, ploam 0x0101, onlines#0
00:00:05.109805 [PON] sync 0x0001, ploam 0x0101, onlines#0
00:00:05.128265 [PON] sync 0x0002, ploam 0x0102, onlines#0
00:00:11.139073 [PON] sync 0x0002, ploam 0x0200, onlines#0
00:00:11.249278 [PON] sync 0x0002, ploam 0x0400, onlines#0
00:00:11.605172 [PON] sync 0x0002, ploam 0x0500, onlines#1
00:00:11.623762 [PON] key index 1, state 0x0002, key 3e56841a 000e7f55 52d50d32 bc3a68fd
00:00:11.651041 [PON] key index 1, state 0x0002, key 3e56841a 000e7f55 52d50d32 bc3a68fd
00:00:11.678095 [PON] key index 1, state 0x0003, key 3e56841a 000e7f55 52d50d32 bc3a68fd
00:00:11.705131 [PON] key index 1, state 0x0004, key 3e56841a 000e7f55 52d50d32 bc3a68fd
00:50:23.661341 [PON] key index 2, state 0x0002, key 9e283152 6cf29ddd 590810ea ed7b4505
00:50:23.687786 [PON] key index 2, state 0x0002, key 9e283152 6cf29ddd 590810ea ed7b4505
00:50:23.714199 [PON] key index 2, state 0x0003, key 9e283152 6cf29ddd 590810ea ed7b4505
00:50:23.740708 [PON] key index 2, state 0x0004, key 9e283152 6cf29ddd 590810ea ed7b4505
```

```
ZXOS11NPI [/] # log show line end 3
file : /mnt/log_0.txt
00:50:23.687786 [PON] key index 2, state 0x0002, key 9e283152 6cf29ddd 590810ea ed7b4505
00:50:23.714199 [PON] key index 2, state 0x0003, key 9e283152 6cf29ddd 590810ea ed7b4505
00:50:23.740708 [PON] key index 2, state 0x0004, key 9e283152 6cf29ddd 590810ea ed7b4505
```

```
ZXOS11NPI [/] # log show line begin 4
file : /mnt/log_0.txt
00:00:04.510154 [OMCI] sfp state changed to on(1).
00:00:04.930275 [PON] sync 0x0000, ploam 0x0101, onlines#0
00:00:05.109805 [PON] sync 0x0001, ploam 0x0101, onlines#0
00:00:05.128265 [PON] sync 0x0002, ploam 0x0102, onlines#0
```

```
ZXOS11NPI [/] # log show line begin 2 flash
file : /mnt/log_0.txt
00:03:57.192380 [PON] pon_deactivate(10) !!
00:03:57.897428 [PON] pon_deactivate(3) !!
```

```
ZXOS11NPI [/] # log show line end 2 flash 1
file : /mnt/log_1.txt
00:01:04.930275 [PON] sync 0x0000, ploam 0x0101, onlines#0
00:01:05.109805 [PON] sync 0x0001, ploam 0x0101, onlines#1
```

- **sysmon mdsync**

shows the current mib data sync counter.

```
ZXOS11NPI [/] # sysmon mdsync
mibDataSync : 67
```

- **sysmon cpu**

shows the current cpu usage as a percentage.

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---

```
ZXOS11NPI [/] # sysmon cpu
CPU usage
cpu usage : 6.702 %
```

- **sysmon process**

shows the current status of each task.

```
ZXOS11NPI [/] # sysmon process
Process status
-----
Task ID | status
-----+-----
0x0a010003 TIME
0x0a010004 EV
0x0a010005 TIME
0x0a010006 EV
0x0a010007 EV
0x0a010008 TIME
0x0a010009 TIME
0x0a01000a TIME
0x0a01000b SYSEV
0x0a01000c SYSEV
0x0a01000d SYSEV
0x0a01000e SYSEV
0x0a01000f READY
0x0b010001 CV
0x0b010004 CV
0x0b010005 CV
0x0b010006 SEM
0x0b010007 SEM
0x0b010008 CV
0x0b010009 CV
MTX(Mutex), SEM(Semaphore), EV(Event)
SYSEV(system Event), MSG(Message)
CV(Conditional Variable), SIG(Signal)
```

- **sysmon memory**

shows the current memory usage as a percentage.

```
ZXOS11NPI [/] # sysmon memory
Memory usage
used/total = 7761424/30318736 (25.599432 %)
```

### 15.3.8. test

- **test <tod | pps | dying-gasp-alarm> enable**

ToD / 1PPS / Dying Gasp function is disabled because it is not an sfp+ spec pin.

Temporarily enable tod/pps/dying-gasp-alarm for test

- **test rogue-onu <mode 1 | forced\_on>**

Rogue onu is forcibly generated for test purposes. There are only two types of rogue\_onu mode: 1 (rogue\_onu detect enable) and 32768 (rogue onu occurred).





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not MEPID. To delete statistics counters, use **cfm mep <MEid> ais-clear-counter**.

```
ZXOS11NPI [/] # cfm mep 1 ais-state
AIS
AISenabled : enabled
AISR_state : reset (begin, reset, defect, defect_soak, report_defect, defect_reported,
defect_clearing)
AISi_state : idle (begin, idle, waiting)
defect_condition :
  no defect condition
reportedAlarmBitMap : 0x0000
ais_period : 0 (0:once per second, 1:once per minute)
ais_pbit_priority : 7
ais_client_level : 0
statistics
  ais_pon_rx_count : 0
  ais_uni_rx_count : 0
  ais_pon_tx_count : 0
  ais_uni_tx_count : 0
```

### • cfm log <(minus)index>

Shows the last (index) packet log transmitted/received. Only the first 64 bytes of the frame are saved, and up to 64 entries are saved. If it exceeds 64, the old log is overwritten by the new packet log.

```
ZXOS11NPI [/] # cfm log -1
[3] 0:00:47.970314 Tx -> PON vid=2501 priority=7 frame_len=101
00000000 01 80 c2 00 00 37 00 0b 6f aa 00 02 81 00 e9 c5 ....7..o.....
00000010 89 02 e0 01 05 46 00 00 00 03 00 0b 04 06 4d 44 ....F.....MD
00000020 31 30 30 37 02 07 4d 41 31 30 30 37 31 00 00 00 007..MA10071...
00000030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
```

## 15.3.10. Packet Capture

### • capture start

Start packet capture

```
ZXOS11NPI [/] # capture start
! Capturing ethernet packets has been started.
```

### • capture stop

Stop packet capture

```
ZXOS11NPI [/] # capture stop
! Capturing ethernet packets has been stopped.
```

### • capture show [detail]

Show captured packet

```
ZXOS11NPI [/] # capture show
Total captured packets: 1
[ 0] 2:31:22.663336 RX<-PON len=76 DA/SA=01:00:5e:00:00:01 3c:8b:cd:f0:5e:39
tag=outer{p7:606 } etype=0800h(IPv4), protocol=02h(IGMP)
ZXOS11NPI [/] # capture show detail
Total captured packets: 1
[ 0] 2:31:22.663336 RX<-PON len=76 cpu_tag={08 10 08 04 00 25 e0 00} tag=outer{p7:606 }
etype=0800h(IPv4), protocol=02h(IGMP)
00000000 01 00 5e 00 00 01 3c 8b cd f0 5e 39 81 00 e2 5e ..^...<...^9...^
00000010 08 00 46 c0 00 20 00 00 00 01 02 44 17 00 00 ..F.. ..D...
00000020 00 00 e0 00 00 01 94 04 00 00 11 64 ee 9b 00 00 .....d....
00000030 00 00 00 00 00 00 00 00 .....
```

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---

- **capture filter etype 0x[HEX\_NUM] proto [DEC\_NUM]**

Set capture packet's filter configure.

```
ZXOS11NPI [/] # capture filter etype 0x0800 proto 2
Capture filter ethertype : 0x800
Capture filter ip_protocol: 2
```

- **capture filter tport uni**

Set capture packet's filter configure.

```
ZXOS11NPI [/] # capture filter etype 0x0800 proto 2
Capture filter tport uni
```

- **capture filter mactype ucast**

Set capture packet's filter configure.

```
ZXOS11NPI [/] # capture filter mactype ucast
```

- **capture filter macaddr 00:11:22:33:44:55**

Set capture packet's filter configure.

```
ZXOS11NPI [/] # capture filter macaddr 00:11:22:33:44:55
Capture filter MAC Address : 00:11:22:33:44:55
```

- **capture filter [reset]**

Show capture packet's filtering info. Reset filter info

```
ZXOS11NPI [/] # capture filter
[Filter List]
-----
Ethernet Type : 0800h(2048)
  IP Protocol: 2
  OpCode      : SHOW_ALL
TX_Port      : UNI
VLAN ID      : SHOW_ALL
Dst MAC Type  : Unicast
MAC Address   : 00:11:22:33:44:55

ZXOS11NPI [/] # capture filter reset
Capture filter has been reset.
```

- **capture exclude [ssh | telnet | arp]**

Not save specific packet types in logs.

```
ZXOS11NPI [/] # capture exclude ssh
exclude set ssh.
```

- **capture exclude [reset]**

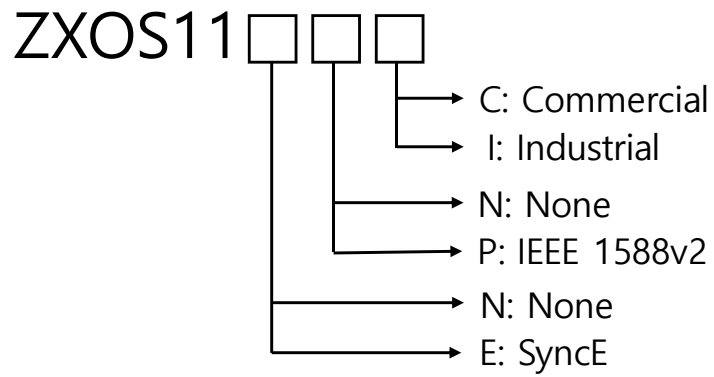
Show current exclusion status. Reset exclusion settings.

```
ZXOS11NPI [/] # capture exclude
ARP : OFF
SSH : ON
TELNET: OFF

ZXOS11NPI [/] # capture exclude reset
Capture exclude has been reset.
```

# 16. Ordering Information

## Zaram P/N



## **ZXOS11NPI**

### **XGSPON-STICK**

#### **Product Specification & Installation/Trouble Shooting Guide**

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