MICROSENS

FlexRate Muxponder (MS430943/4M) -Quick Start Manual

Module presentation



MS430943/4M family is a one slot wide FlexRate (100G/200G) module with the following characteristics:

- Two configurable 100 Gigabit Ethernet / OTU4 client port interfaces
- Two operational modes:
 - 200G Metro Reach (MR) Transponder
 - 100G Ultra Long Haul (ULH) Transponder
- FlexRate 200G Muxponder family is composed of 2 versions:
 - Dual Fiber (MS430943M)
 - Single Fiber (MS430944M)
- QSFP28 modules for client port physical interfacing

Connectors are LC/PC.

The FlexRate client traffic type is 100GbE or OTU4.

Insert the FlexRate module

Wait until HW/SW leds on the module are green and stable. (Around 5 min)



Configuration of the module :

<u>1/ In case of new installation:</u> "Restore Default Config" On Web interface -> Select the module -> Right Click -> Configuration/Start-Up

	Restore Default Config Refresh
and the second se	
P	
	Annix

On CLI -> configure_pm -c `slot_number'

admir	nistra	a@nonan	ne (20	0000)> co	onfigure_pm -c	6			
This	will	erase	the	current	configuration	and	reset	the	board.
Conti	inue 1	? (y/N)							

SAFETY WARNING: By default, the line Tx and all the client ports are "In Service". It means that all Tx are power on.

2/ In case of PM replacement :

On Web interface -> Tic the parameter "Automatic Config Restore" on MGNT/Configuration menu. Wait for the Cold restart and plug the new module.

Narm Naintenance Configuration	
Critical Alarm Traps Enable	CLI access CLI by SSH 💌
Major Alarm Traps Enable	CRAFT scores Http
Minor Alarm Traps Enable	RSTP Enable
Control Traps Enable	Log Node Rotate 💌
🗹 Contig Traps Enable	P Node Controller Mode
MGNT Critical Alarm Traps Enable	Restrict Unprivileged Users Rights
MGNT Major Traps Enable	OSC/DCC Link Up Thresh. [10-30]s 20
MGNT Minor Alarm Traps Enable	OSC/DCC Link Down Thresh. [2-3]s 3
MGNT Control Traps Enable	Account Auto-Lock [-1 / 1-10] err -1
MGNT Config Traps Enable	Fail Count Reset [-1 / 1-10] hrs -1
MGNT Event Traps Enable	Chassis Index 0
Traps Mode NMS Traps 💌	FTP Enable
Automatic Config Restore	✓ TFTP Enable
	Refresh Apply

On CLI -> set_mgnt_config

20) Traffic Modules conf auto restore (Enable/Disable, current is Enable):

Wait for the Cold restart and plug the new module.

STEP 2: Module setup

Optical connection

Connect the module on line and client side with optical patchcords.

- Line side to the MUX module or Compensation Module
- Client side to the respective equipment

WARNING: Line_Tx is emitting by default, so optical power will be received from the far end module.

In order to prevent Rx damage, use LC/PC attenuator to adjust the input power, and be as close as possible of the typical value.

Mode configuration

The FlexRate Muxponder is able to work in 200G-MR or in 100G-ULH bitrate mode. By default, 200G-MR is select. If 100G-ULH mode is required, you need to modify the setting:

On Web interface -> Select the module -> Right Click -> Configuration/Other

Narm	Maintenance	Nonitoting	Configuration	Rmon
Start	Up			
01-	Client1 Q2-C	lient2 Une	X1-Line1 Of	her
	Module Mode		200G-M	R 🗸
			100G-U	н ғ

On CLI -> set_config `slot_number' other

```
administra@7-50(8104)> set_contig 4 other
2) Module Mode ; possible values : (100G-ULH,200G-MR), current is 200G-MR
```

After this setting, the module will restart

Wavelength configuration

1/ TX Wavelenght for MS430943M Dual fiber use:

On Web interface -> Select the module -> Right Click -> Configuration/X1-Line1

				Restore Default Cor	ng
tart-Up					
01-Client1 Line	X1-Line1	Other			
21-Client1 Line X1-Line1 label	X1-Line1	Other	1	 	
D1-Client1 Line X1-Line1 label	X1-Line1 t	Other	1	 	

On CLI -> set_config `slot_number' X1-Line1

```
administra@7-50(8104)> set_config 4 X1-Line1
2) ITU channel ; possible values : (C13.50 ... C62.00) current is C45.00 / 1 541,349nm / 194,500Thz
```

2/ Tx/Rx Wavelength for MS430944M Single Fiber use: The MS430944M module has a different wavelength on TX and on Rx line side to allow the single fiber transmission mode.

On Web interface -> Select the module -> Right Click -> Configuration/X1-Line1

Alarm	Mainte	nance	Monit	oring	Config	uration	Rm	an
Start-	Jp							
01-0	Client1	02-Clie	rit2	Line	X1-Line	1 0	her	
	X1-Line	1 label		1	JNE_Nu	mber 1		
	Line	Optical	Lasers	Shutdo	мП			
	Line TR	BCV Out	pout Po	wer (+	3 -25]		D dE	im
	ITU Cha	innel	C42.0	0:154	3,730nm	/ 194,20	OTHE	Ŧ
	TX ITU C	hannel	C42.0	D:154	3,730nm	/ 194,20	10THz	+

On CLI -> set_config `slot_number' X1-Line1

administra@7-50(18232)> set_config 4 X1-Line1 2) ITU Channel ; possible values : (C13.50 ... C62.00) current is C45.00 / 1 541,349nm / 194,500Thz : 3) TX ITU Channel ; possible values : (C13.50 ... C62.00) current is C45.00 / 1 541,349nm / 194,500Thz :

DCC channel configuration (if necessary)

On Web interface -> Select the module -> Right Click -> /Configuration/Start-Up/Line

(and down			1.000	hieroneere
Start-L	Jp			
01-0	dienti 1 02-ci	ent2 Line	X1-Line1	Other
	Line Port O	ut Of Service		
	PIDCC Enabl	a .		

On CLI -> set_config `slot_number' other

administra@IP181(24072)> set_config 3 other 1) DCC Enable ; possible values : (Disable,Enable), current is Disable : **Label the Client and the Line ports** to make easier their identification On Web interface -> Select the module -> Right Click -> Configuration/Qi-Client#i (and Configuration/X1-Line1)

Alarm	Mainte	inance	Monitoring	Configu	ration	Rmon
Start-	Up					
_						_
Q1-0	client1	Q2-Clie	ntz Line	X1-Line	1 01h	er
	Q1-Cie	int1 label:		PORT_NU	mber 1	

On CLI -> set_config `slot_number' Q1-Client1 (for client1) / set_config `slot_number' X1-Line1

administra@7-50(8104)>	set_config 4		
Q1-Client1	Q2-Client2	X1-Linel	other

For unused client, it is recommended to set the client port(s) "Out Of Service" to not interfere with the management of the port(s) in service.

Client traffic type

Client physical interfacing is done through standard QSFP28 modules. Client traffic type can be set in 100 Gigabit Ethernet or in OTU4.

On Web interface -> Select the Client -> Right Click -> /Configuration/Qi-Client#i

Alarm	Maintenance	Monitoring	Configuration	Rmon
-	100			
Stan-	up [
01-0	client1 02-Ci	ent2 Line	X1-Line1 Of	her
	Q1-Client1 labe	6	PORT_Number 1	a II
				1
	Client Port 0	Out Of Service	ġ.	
	Client Optic	ai Laser Shut	down	
	BUFEC Eng	ble		
		1990) 1990) - Maria Maria (1990)		
	Client Lase	r Auto Shutdo	wn	
	Client Protocol		100686	
			OTU4	
			100GBE	

On CLI -> set_config `slot_number' Q1-Client1 (for client1)

```
administra@7-50(8104)> set_config 4 Q1-Client1
4) Client Protocol ; possible values : (OTU4,100GBE), current is 100GBE :
```

<u>Configuration of the line output power (MS430944M only)</u>

For MS430944M module, the output power of the line can be modulate in the range [-25dBm;+3dBm] -> Default value is 0dBm.

For MS430943M output power value, you can refer to the table in STEP 3.

On Web interface -> Select the Line -> Right Click -> Configuration/X1-Line1

Alarm	Maintenance	Monitoring	Configuration	Rmon
Start-U	Ja dr			
01-0	Sienti 02-Cii	ent2 Line	XI-Line1 Of	her
	X1-Line1 label:	1	LINE_Number 1	
	Line Optical	I Laser Shutdo	wm	
	Line TRSCV Ou	itpout Power (+	3 -25]	0 dBm

On CLI -> set_config `slot_number' Q1-Client1 (for client1) / set_config `slot_number' X1-Line1

```
administra@7-50(8104)> set_config 4 X1-Line1
5) Line Trscv Outpout Power ; possible values : (-25.0 ... 3.0) : current is -5.0 dBm :
```

STEP 4: End of installation

Leds status

Verify that all the led are green or unlighted (in case of port Out Of service).

Alarms status

Check that no alarm is present on line side and on each client In Service.

On Web interface -> Select the module -> Right Click -> Alarm (for Qi-Client#i and X1-Line1)



On CLI -> get_alarm `slot_number' S1-Client1 (for client1 and Line)

administra@7-50(18232)> get alarms 4 Ql-Clientl

Power Monitoring

Check that input/output power on line side and on each client In Service and verify it is in the correct range.

Adjust the input power if necessary with LC/PC attenuator, in order to be as close as possible of the typical value.

	Tx Pout (dBm)			Rx Sensitivity (dBm)					
	Min	Тур	Max	Min	Тур	Max	OSNRmin	OSNR EOL	
MS430943M									
200G-MR	-	0	-	-25	-15	-5	25dB	21dB	
				-15	-13	-9	21dB		
100G-ULH	-	0	-	-25	-15	-5	25dB	12.5 dB	
				-15	-13	-9	12dB		
MS430944M									
200G-MR	-25	-	3	-25	-15	-5	25dB	21dB	
				-15	-13	-9	21dB		
100G-ULH	-25	-	3	-25	-15	-5	25dB	12.5 dB	
				-15	-13	-9	21dB		

(See following table for module characteristics)

On Web interface -> Select the module -> Right Click -> Monitoring/Counters (for Qi-Client#i and X1-Line1)

arm Maintenance	Monitoring	Configuration	Rmon

On CLI -> get_measurement `slot_number' X1-Line1 (for Line)

administra@7-50(18232)> get_measurements 4 X1-Linel

Remote Network Monitoring (Rmon) on Ethernet client

Open the Monitoring window to display the counters of the Ethernet traffic on each port In Service. Check no error is present.

On web interface -> Select the module -> Right Click -> Rmon (for Qi-Client#i)

Alarm | Maintenance | Monitoring | Configuration | Rmon | Reset

On CLI -> get_counters `slot_number' Q1-Client1 (for client1)

administra@7-50(18232)> get counters 4 Q1-Client1

FEC Correction rate

Verify on Line side the Pre-SD FEC Errors rate.

<u>1/200G Mode</u> This should be below <1x10-2 to assure a proper transmission without uncorrected errors

<u>2/100G Mode</u> This should be below <1x10-3 to assure a proper transmission without uncorrected errors

On Web interface -> Select the module -> Right Click -> Monitoring/Counter



On CLI -> get_counters `slot_number' X1-Line1

administra@7-50(18232)> get_counters 4 X1-Linel

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