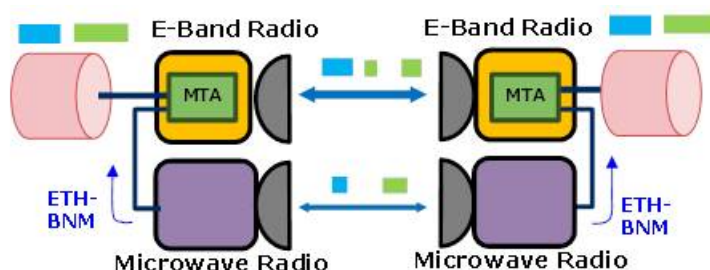


iPASOLINK EX Advanced

MTA ANNEXURE MANUAL



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iPASOLINK EX Advanced

MTA ANNEXURE MANUAL

CONTENTS

1. OVERVIEW 1-1

1.1 About this Document 1-1

1.2 Understanding Multi Traffic Aggregation (MTA) 1-1

1.2.1 Need for Multi Traffic Aggregation (MTA) 1-1

1.2.2 Multi Traffic Aggregation (MTA) 1-2

2. Getting started with MTA on iPASOLINK EX/A Dual 2-1

2.1 Prerequisites for MTA Configuration 2-1

2.2 Operational Conditions for MTA Configuration 2-2

3. Use Cases for MTA 3-1

3.1 Use case 1 - MTA [2 MODEM (XPIC) and 1 ETH port] without PTP 3-1

3.1.1 Scenario briefing 3-1

3.1.2 Topology 3-1

3.1.3 Step by step Configuration 3-2

3.1.3.1 Steps Summary - NE1 and NE2 3-2

3.1.3.2 Steps Summary - NE3 and NE4 3-3

3.1.3.3 Detailed Configuration steps – NE1 and NE2 3-3

3.1.3.4 Detailed Configuration steps – NE3 and NE4 3-12

3.1.4 Alarm and Troubleshooting: 3-18

3.1.5 Use Case Verification 3-19

3.2 Use case 2 - MTA [2 MODEM (XPIC) and 1 ETH port] with PTP 3-22

3.2.1 Scenario briefing 3-22

3.2.2 Topology 3-22

3.2.3 Step by Step Configuration 3-23

3.2.3.1 Steps Summary - NE1 and NE2 3-23

3.2.3.2 Steps Summary - NE3 and NE4 3-23

3.2.3.3	Detailed Configuration steps - NE1 and NE2	3-23
3.2.3.4	Detailed Configuration steps - NE3 and NE4	3-27
3.2.4	Alarm and Troubleshooting:	3-28
3.2.5	Use Case Verification	3-29
3.3	Use case 3 - MTA with 2 MODEM (not XPIC) and 1 ETH port	3-33
3.3.1	Scenario briefing	3-33
3.3.2	Topology	3-33
3.3.3	Step by Step Configuration	3-33
3.3.3.1	Steps Summary - NE1 and NE2	3-33
3.3.3.2	Steps Summary - NE3 and NE4	3-33
3.3.3.3	Detailed Configuration steps - NE1 and NE2	3-34
3.3.3.4	Detailed Configuration steps - NE3 and NE4	3-35
3.3.4	Alarm and Troubleshooting:	3-35
3.3.5	Use Case Verification	3-36
3.4	Use case 4 - MTA with 1 MODEM and 1 ETH port	3-37
3.4.1	Scenario briefing	3-37
3.4.2	Topology	3-37
3.4.3	Step by Step Configuration	3-37
3.4.3.1	Steps Summary - NE1 and NE2	3-37
3.4.3.2	Steps Summary - NE3 and NE4	3-37
3.4.3.3	Detailed Configuration steps - NE1 and NE2	3-38
3.4.3.4	Detailed Configuration steps - NE3 and NE4	3-40
3.4.4	Alarm and Troubleshooting:	3-40
3.4.5	Use Case Verification	3-41
3.5	Use case 5 - MTA with 2 MODEMs only	3-42
3.5.1	Scenario briefing	3-42
3.5.2	Topology	3-42
3.5.3	Step by Step Configuration	3-42
3.5.3.1	Steps Summary - NE1 and NE2	3-42
3.5.3.2	Detailed Configuration steps - NE1 and NE2	3-43
3.5.4	Alarm and Troubleshooting:	3-47
3.5.5	Use Case Verification	3-48
3.6	Use case 6 - MTA Slave Node Reset during FW upgrade	3-49
3.6.1	Scenario briefing	3-49
3.6.2	Topology	3-49
3.6.3	Step by Step Configuration	3-49
3.6.3.1	Steps Summary - NE1 and NE2	3-49

3.6.3.2	Steps Summary - NE3 and NE4	3-49
3.6.3.3	Detailed Configuration steps - NE1 and NE2	3-50
3.6.3.4	Detailed Configuration steps - NE3 and NE4	3-50
3.6.4	Alarm and Troubleshooting:	3-50
3.6.5	Use Case Verification	3-50
3.7	Use case 7 - MTA with LLF	3-54
3.7.1	Scenario briefing	3-54
3.7.2	Topology	3-54
3.7.3	Step by Step Configuration	3-54
3.7.3.1	Steps Summary - NE1 and NE2	3-54
3.7.3.2	Steps Summary - NE3 and NE4	3-55
3.7.3.3	Detailed Configuration steps - NE1 and NE2	3-55
3.7.3.4	Detailed Configuration steps - NE3 and NE4	3-56
3.7.4	Use Case Verification	3-56
3.8	Use case 8 - MTA [2 MODEM (XPIC) and 1 ETH port] in Transparent	
Mode	3-59
3.8.1	Scenario briefing	3-59
3.8.2	Topology	3-59
3.8.3	Step by Step Configuration	3-59
3.8.3.1	Steps Summary - NE1 and NE2	3-59
3.8.3.2	Steps Summary - NE3 and NE4	3-60
3.8.3.3	Detailed Configuration steps - NE1 and NE2	3-60
3.8.3.4	Detailed Configuration steps - NE3 and NE4	3-67
3.8.4	Alarm and Troubleshooting:	3-72
3.8.5	Use Case Verification	3-72
3.9	Other Example Topologies	3-74

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DOCUMENT WARRANTY

1. The information in this document is subject to change without prior notice.
2. Screenshots of WebLCT provided in this document are examples. Screenshot samples in this document should be the latest as of issuing time, however, their appearances may vary according to configurations, operation modes and specified parameters of the equipment, WebLCT application's release version, etc.
3. This document is provided on the assumption that the targeted users have skills and knowledge of restrictions and precautions to operate the equivalent equipment. Refer to the equipment manual for details.

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1. OVERVIEW

1.1 About this Document

This document is created to describe the MTA feature of iPASOLINK EX Advanced Dual (hereinafter iPASOLINK EX/AD) and the interoperability of MTA feature with other features and other iPASOLINK variants.

1.2 Understanding Multi Traffic Aggregation (MTA)

1.2.1 Need for Multi Traffic Aggregation (MTA)

The iPASOLINK EX Advanced Dual realizes various network expansion demands with flexibility, agility, and lower cost compared to optical fibres, with high reliability that satisfies demanding customers and supports their business with 20Gbps link by two RF channel capacity features on single box with a lightweight, compact squared enclosure.

With the increasing demand for Bandwidth extension up to 25 Gbps, iPASOLINK EX Advanced Dual provides solution with MTA.

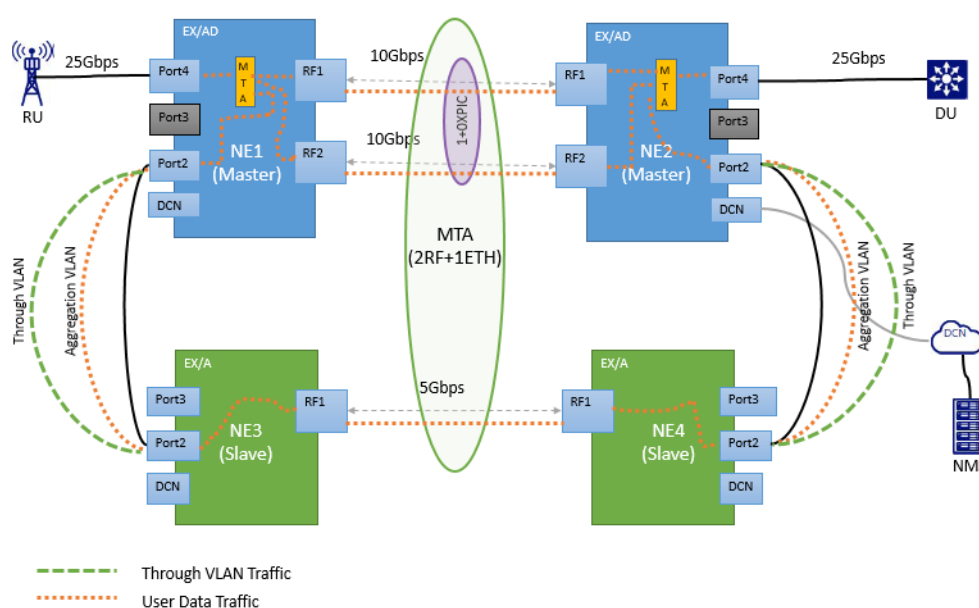
1.2.2 Multi Traffic Aggregation (MTA)

Previously, iPASOLINK introduced Radio Traffic Aggregation (RTA) function to achieve bandwidth extension and redundancy by aggregating wireless links collectively as a single logical interface.

Multi Traffic Aggregation (MTA) function is an extended RTA function to achieve bandwidth extension by aggregating wireless and wired link as a single logical interface. MTA function supports following configurations.

1. Aggregation of two Wireless links.
2. Aggregation of one Wireless and one Wired link.
3. Aggregation of two Wireless and one Wired link.

Figure 1-1 Multi Traffic Aggregation (MTA)



Above figure represent Multi Traffic Aggregation [MTA] of two Wireless and one Wired link. Here, the data traffic of 25 Gbps [from RU to DU or vice versa] flows through the MTA link between NE1-NE3 [Master – Slave] and NE2- NE4 [Master - Slave] Nodes. The MTA member ports [MODEMs RF1, RF2 and Ethernet port Port2] are linked by two methods, **Direct Link** or **Relay Link**. The 20 Gbps data traffic is communicated directly through Direct link and the remaining 5 Gbps traffic is communicated using the **Aggregation VLAN** over the **Relay Link**. The **Through VLAN** is used for Master-Slave Management data communication.

MTA Terminologies:

Direct Link: Direct Link is connecting to MTA opposite node with wireless link.

Relay Link: Relay Link is connecting to MTA opposite node through MTA slave node.

Aggregation VLAN: VLAN used for encapsulating the traffic between MTA Master and Slave node.

Through VLAN: VLAN used for ETH-BN (Rx) function and In-band management communication to MTA Slave node.

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2. Getting started with MTA on iPASOLINK EX/A Dual

2.1 Prerequisites for MTA Configuration

- Minimum one MODEM should be available.
- The MAX frame size of both master and slave node should be set to maximum size (9600 byte) as the aggregated frame size of MTA are up to 9600 bytes. Refer [Condition 3-1](#).
- ETH Port should be link up by 1 Gbps or 10 Gbps. Because the frame length of the encapsulated frame may be over 2000 Byte, ETH link of 10 Mbps or 100 Mbps (Fast Ethernet) is not suitable to be used.

2.2 Operational Conditions for MTA Configuration

- The MTA setting is applicable for iPASOLINK EX/A Dual equipment only.
- Only one MTA Group is allowed per equipment.
- Only MODEM port should be configured in MTA Direct Link. Refer [Condition 3-1](#).
- Only ETH port should be configured in MTA Relay Link. Refer [Condition 3-1](#).
- In case of setting MTA with one MODEM and ETH port, other MODEM should be set to "Not Used". Refer [Figure 3-54](#).
- In case of setting MTA with ETH port, only ETH Port2 is allowed as member of MTA group. Refer [Condition 3-2](#).
- In case of setting MTA with ETH port2 ([Aggregation VLAN](#)).
 - ♦ [Aggregation VLAN](#) should not be already registered in VLAN list. Refer [Condition 3-2](#).
 - ♦ [Aggregation VLAN](#) cannot be assigned for user traffic or other service. Refer [Condition 3-3](#).
 - ♦ MTA [Aggregation VLAN](#) should be used only for slave connection, not be used for user traffic.
 - ♦ The ETH port should be assigned MEP with ETH-BN (Rx) using MTA Through VLAN. [In EX/A, MEP for ETH-CCM on MTA Through VLAN is not supported.]
 - ♦ The output rate of ETH Port2 is fixed to ETH-BN (Rx) BW. Link Speed and Manual shaper rate are not supported.
 - ♦ Only Sync-E/ LLDP can be set to ETH Port2 interface.
- At the time of creating MTA setting, Multi group logical interface will take over the configuration of VLAN, ETH-OAM, QoS, Static FDB, RSTP / MSTP, LLF and PTP-BC of the least MODEM port associated in the MTA group. Refer .
- At the time on deleting MTA setting, the least MODEM Port associated in the MTA group will take over the configuration of VLAN, ETH-OAM, QoS, Static FDB, RSTP / MSTP, LLF and PTP-BC of the Multi group logical interface. The remaining ports (MODEM and ETH Port2) will be configured with default setting. Refer [Condition 3-5](#).
- After configuring MTA group, Header compression is fixed to disable on MODEM interface. Refer [Condition 3-3](#).
- When Port02 is member port of other LAG, it cannot be configured as the member port of Multi Group. Refer [Condition 3-2](#).
- QoS Shaper rate for MTA link is calculated based on below condition. Refer [Condition 3-4](#).

- i) MTA setting with ETH-BN (Rx) enabled on MTA GRP:
MTA link Shaper rate = MTA Master wireless link bandwidth +
value received by ETH-BN (Rx) on Port2 from MTA slave
- ii) MTA setting without ETH-BN (Rx) enabled on MTA GRP:
MTA link Shaper rate = MTA Master wireless link bandwidth
- In Transparent Mode, only below two MTA Configuration are allowed.
 - i) *MTA GRP with only two MODEM*
 - ii) *MTA GRP with only two MODEM and one ETH Port (Port2)*
- In case of setting MTA with only two MODEM in Transparent Mode, ETH-OAM settings are not recommended though LCT will not guard ETH-OAM configuration.
- If the ETH connection between Master and Slave fails, the MTA member reduction control will not work properly in the opposite site and all MTA traffic will be stopped. By setting LLF between Slave nodes, line failures can be detected by the opposite Slave node, avoiding the above problems.

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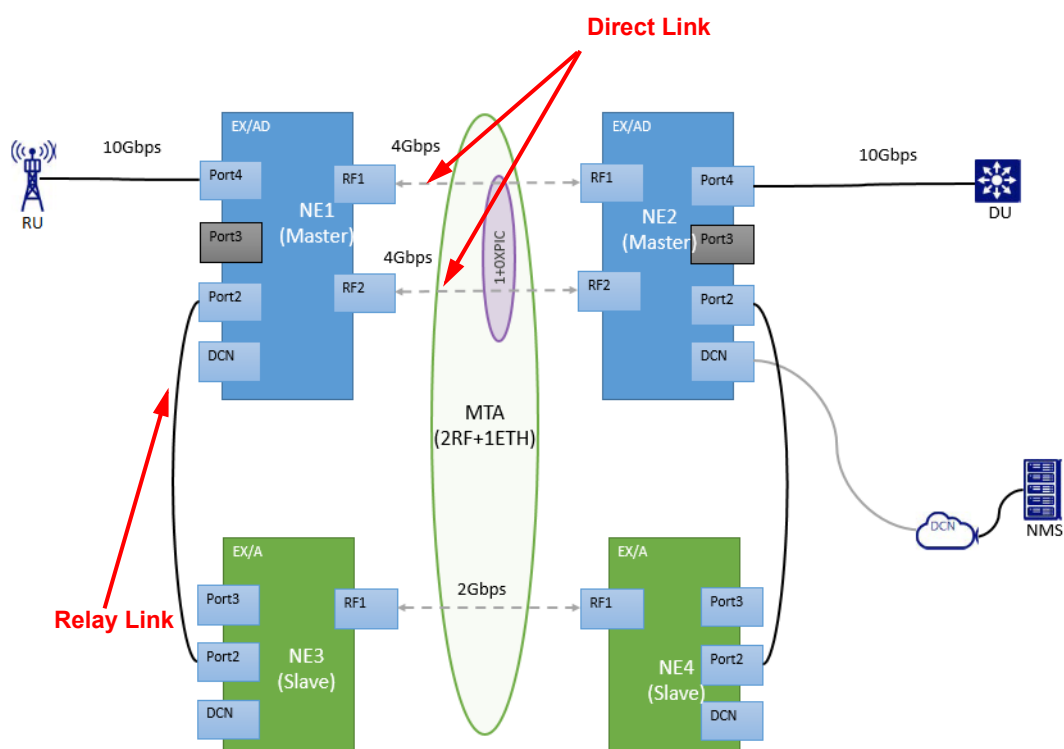
3. Use Cases for MTA

3.1 Use case 1 - MTA [2 MODEM (XPIC) and 1 ETH port] without PTP

3.1.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology without PTP. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

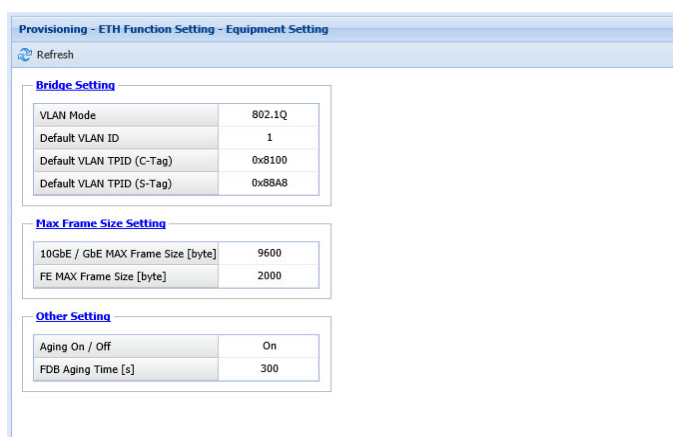
3.1.2 Topology



NOTE: The Slave Nodes can be other VR series iPASOLINK Equipment also ([3.9 Other Example Topologies](#)). This Manual demonstrates Use cases with EX/A as Slave Nodes

Condition 3-1

- Only MODEM port should be configured in MTA Direct Link as shown in [3.1.2 Topology](#).
- Only ETH port should be configured in MTA Relay Link as shown in [3.1.2 Topology](#).
- The MAX frame size of both master and slave node should be set to maximum size (9600 bytes) as shown below. Refer [9.2.2 Max Frame Size Setting in Set Network and System Provisioning](#) for details.



Provisioning - ETH Function Setting - Equipment Setting

Refresh

Bridge Setting

VLAN Mode	802.1Q
Default VLAN ID	1
Default VLAN TPID (C-Tag)	0x8100
Default VLAN TPID (S-Tag)	0x88A8

Max Frame Size Setting

10GbE / GbE MAX Frame Size [byte]	9600
FE MAX Frame Size [byte]	2000

Other Setting

Aging On / Off	On
FDB Aging Time [s]	300

3.1.3 Step by step Configuration

This section contains the step by step procedure to bring up the above topology.

3.1.3.1 Steps Summary - NE1 and NE2

1. Register MODEM RF1, RF2 and enable XPIC configuration.
2. Configure CS/Reference Modulation for the MODEM RF1, RF2.
3. Configure ETH ports Port2 and Port4 as 10G port.
4. Create user traffic VLAN (VLAN X) and Through VLAN (VLAN Y).
5. Associate user traffic VLAN to ETH Port4 and MODEM Ports RF1 and RF2, Through VLAN to ETH Port2 and MODEM Port RF1.
6. Create MEG with ETH-CCM enable, ETH-BN Rx-enable.
7. Create MEP on MODEM Port RF1 [Least Port] using Through VLAN.
8. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN (VLAN Z), Through VLAN and choose MEP Index created in Step 7 from drop-down menu.

3.1.3.2 Steps Summary - NE3 and NE4

1. Register MODEM RF1.
2. Configure CS/Reference Modulation for the MODEM RF1.
3. Configure ETH port Port2 to as 10G port.
4. Create VLAN IDs same as Through VLAN (VLAN Y) and Aggregation VLAN (VLAN Z) in Master (NE1 and NE2).
5. Associate VLAN Y and VLAN Z to ETH Port2 and VLAN Z to MODEM Port RF1.
6. Create MEG with ETH-CCM enable, ETH-BN Tx-enable, BNM Server MEP as MODEM RF1.
7. Create MEP on ETH Port2 using Through VLAN.

3.1.3.3 Detailed Configuration steps – NE1 and NE2

Procedure 3-1

1. Register MODEM RF1, RF2 and enable XPIC configuration. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-1 Equipment Configuration Window

Equipment Setup - Equipment Configuration

Refresh Setup

NE Name

No.001

Equipment Configuration

MODEM
MODEM

MODEM / XPIC Configuration

Slot No.	1	2
XPIC GRP	XPIC GRP1	

2. Configure CS/Reference Modulation for the MODEM RF1,RF2. Refer **4.3 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-2 Radio Configuration Window

Equipment Setup - Radio Configuration

Refresh Setup

Current Status

	XPIC GRP1 (MODEM) (Slot01/02)	
	1+0 XPIC	
	No.1	No.2
Channel Spacing	750MHz	
Reference Modulation	128QAM	
ETH Bandwidth [Mbps]	4075	4075
TX Frequency [MHz]	71125.000	
RX Frequency [MHz]	81125.000	
Frame ID	1	18
TX Power Control	MTPC	
TX Start Frequency [MHz]	71125.000	
TX Stop Frequency [MHz]	75875.000	
Frequency Step [MHz]	1.250	
Shift Frequency [MHz]	10000.000	
Upper / Lower	Lower	
Sub Band	C	
RF Frequency Type	TX & RX	
Polarization	Vertical	Horizontal

MTA Master wireless link bandwidth

3. Configure ETH ports Port2 and Port4 as 10G port. Refer **4.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-3 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage: ☒ Enable ☐ Disable

Port Name: Port02 - Relay link

10GbE Usage: ☒ Enable ☐ Disable

Media Type: ☐ Electrical ☒ Optical

Speed: 10 [Gbps]

Duplex: ☒ Full

MDI / MDI-X: ☒ MDI ☐ MDI-X

Flow Control: ☐ Enable ☒ Disable

Sync ETH: ☐ Enable ☒ Disable

LLDP Usage: ☐ Enable ☒ Disable

LLDP Mode: ☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype: ☒ MAC Address ☐ Interface Name

ALS Usage: ☐ Enable ☒ Disable

ALS Interval: 60 [s]

OK Cancel

Figure 3-4 ETH Port Setting (Main - Port04) Window

ETH Port Setting (Main - Port04)

Port Usage: ☒ Enable ☐ Disable

Port Name: Port04 - Data Link

10GbE Usage: ☒ Enable ☐ Disable

Media Type: ☐ Electrical ☒ Optical

Speed: 10 [Gbps]

Duplex: ☒ Full

MDI / MDI-X: ☒ MDI ☐ MDI-X

Flow Control: ☐ Enable ☒ Disable

Sync ETH: ☐ Enable ☒ Disable

LLDP Usage: ☐ Enable ☒ Disable

LLDP Mode: ☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype: ☒ MAC Address ☐ Interface Name

ALS Usage: ☐ Enable ☒ Disable

ALS Interval: 60 [s]

OK Cancel

Figure 3-5 ETH Port Setting Window (1/2: on the leftmost)

Provisioning - ETH Function Setting - ETH Port Setting										
Refresh										
Item	Slot	Port	Port Usage	Port Name	SFP	Status			10GbE Usage	Media Type
Main		Port02	Enable	Port02 - Relay link	10G BASE-SR	Link	Speed	Duplex	10GbE Usage	Media Type
		Port03	Disable			Link Up	10 [Gbps]	Full	Enable	Optical
		Port04	Enable	Port04 - Data Link	10G BASE-SR	Link Up	10 [Gbps]	Full	Enable	Optical

Figure 3-6 ETH Port Setting Window (2/2: on the rightmost)

Function Setting - ETH Port Setting										
Setting										
Media Type	Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype	ALS Usage	ALS Interval
Optical	10 [Gbps]	Full		Disable	Disable	Disable			Disable	
Optical	10 [Gbps]	Full		Disable	Disable	Disable			Disable	

4. Create user traffic VLAN (VLAN X) and Through VLAN (VLAN Y). Refer **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-7 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting
VLAN List

Add VLAN ID
Delete VLAN ID

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Number of items per page: (1 - 256)

VLAN ID	VLAN Service Name
1	(Undefined)
100	User Traffic VLAN
200	MTA Through VLAN

5. Associate user traffic VLAN to ETH Port4 and MODEM Ports RF1 and RF2, Through VLAN to ETH Port2 and MODEM Port RF1. Refer **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-8 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting | VLAN List

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item:

Port:

Number of items per page: (1 - 256)

Item	Slot	Port	Port Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port02	Port02- Relay Link	200	Trunk	MTA Through VLAN	
Main		Port03		1	Access	(Undefined)	
Main		Port04	Port04 - Data Link	100	Trunk	User Traffic VLAN	
MODEM	Slot01	Port01		100	Trunk	User Traffic VLAN	
MODEM	Slot01	Port01		200	Trunk	MTA Through VLAN	
MODEM	Slot02	Port01		100	Trunk	User Traffic VLAN	

6. Create MEG with ETH-CCM enable, ETH-BN Rx-enable. Refer **9.6.1.1 Add MEG Index in Set Network and System Provisioning** for details.

Figure 3-9 OAM MEG Setting (Add) Window

OAM MEG Setting (Add)

MEG Index: 1 (1 - 128)

Maintenance Domain Name: MTA-MEG

Short MA Name: MEG-01

MEG Level: 1

CCM: ☒ Enable ☐ Disable

ETH-CC Period: 10 [s]

CCM Priority: 0

ETH-BN (TX)

BNM (TX): ☐ Enable ☒ Disable

BNM Server MEP:

ETH-BN (TX) Period: 1 [s]

BNM Priority: 7

BNM Hold Time: 1 [s]

ETH-BN (RX)

BNM (RX): ☒ Enable ☐ Disable

ETH-BN (RX) Period: 10 [s]

Figure 3-10 ETH OAM Setting Window

Provisioning - ETH Function Setting - ETH OAM Setting													
Refresh													
OAM MEP OAM MIP OAM MEG Link OAM													
Add MEG Delete MEG													
MEG Index	Maintenance Domain Name	Short MA Name	MEG Level	CCM	ETH-CC Period	CCM Priority	ETH-BN (TX)				ETH-BN (RX)		
							BNM	BNM Server MEP	ETH-BN Period	BNM Priority	BNM Hold Time	BNM	ETH-BN Period
1	MTA-MEG	MEG-01	1	Enable	10 [s]	0	Disable					Enable	10 [s]

7. Create MEP on MODEM Port RF1 [Least Port] using Through VLAN. Refer **9.6.2.1 Add MEP Index in Set Network and System Provisioning** for details.

Figure 3-11 OAM MEP Setting (Add) Window

MEP Configuration

MEP Index: 1 (1 - 128)

MEP ID: 1 (1 - 8191)

Item: MODEM (Slot01)

Port: Port01

ETH OAM Source MAC Address: D4:92:34:31:0F:04

Direction: ☐ Up MEP ☒ Down MEP

Enable	VLAN ID	VLAN Service Name
<input type="radio"/>	100	User_Traffic_VLAN
<input checked="" type="radio"/>	200	MTA_Through_VLAN

MEG Configuration

Enable	MEG Index	Maintenance Domain Name	Short MA Name
<input checked="" type="radio"/>	1	MTA-MEG	MEG-01

Peer MEP Configuration

Add Peer MEP

Enable	Peer MEP ID
<input checked="" type="checkbox"/>	2

OK Cancel

Figure 3-12 ETH OAM Setting Window

Provisioning - ETH Function Setting - ETH OAM Setting													
Refresh													
OAM MEP OAM MIP OAM MEG Link OAM													
Add MEG Delete MEG													
MEP Index	MEP ID	MEG Index	Maintenance Domain Name	Short MA Name	MEG Level	CCM	Direction	VLAN ID	VLAN Service Name	Item	Slot	Port	Peer MEP ID
1	1	1	MTA-MEG	MEG-01	1	Enable	Down MEP	200	MTA_Through_VLAN	MODEM	Slot01	Port01	2

8. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN (VLAN Z), Through VLAN and choose MEP Index created in Step 7 from drop-down menu. Refer **8.2.3 Add Multi LAG in Set Network and System Provisioning** for details.

Figure 3-13 Multi LAG Setting Window

The screenshot shows the 'Multi LAG Setting' window. Under 'Link Aggregation Group', 'LAG' is set to 'Multi GRP1', 'LAG Name' is 'MTA-GRP', and 'VLAN ID' is '100,200'. Under 'Link Aggregation Port', there is a table with columns: Item, Slot, Port, LAG, Aggregation VLAN, Through VLAN, and ETH-BN MEP. The table contains three rows: MODEM Slot01 Port01, MODEM Slot02 Port01, and Main Port02. The 'Main Port02' row is circled in red, and a red arrow points to it with the text 'MTA with ETH port'.

Item	Slot	Port	LAG	Aggregation VLAN	Through VLAN	ETH-BN MEP
MODEM	Slot01	Port01				
MODEM	Slot02	Port01				
Main		Port02		300	200	1

Condition 3-2

- In case of setting MTA with ETH port, Only ETH Port2 is allowed as member of MTA group as shown in above [Figure 3-13](#).
- When Port02 is member port of other LAG, it cannot be configured as the member port of Multi Group as shown below.

The screenshot shows the 'Multi LAG Setting' window. Under 'Link Aggregation Group', 'LAG' is set to 'Multi GRP1', 'LAG Name' is empty, and 'VLAN ID' is '100,200,400'. Under 'Link Aggregation Port', there is a table with columns: Item, Slot, Port, LAG, Aggregation VLAN, Through VLAN, and ETH-BN MEP. The table contains three rows: MODEM Slot01 Port01, MODEM Slot02 Port01, and Main Port02. The 'Main Port02' row is circled in red, and a red arrow points to it with the text 'Check box disabled'.

Item	Slot	Port	LAG	Aggregation VLAN	Through VLAN	ETH-BN MEP
MODEM	Slot01	Port01				
MODEM	Slot02	Port01				
Main		Port02	ETH GRP1			

- Aggregation VLAN should not be already registered in VLAN list. Using Aggregation VLAN from VLAN List throws below error.

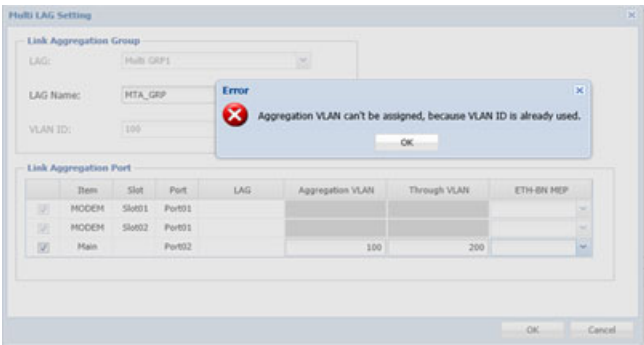


Figure 3-14 Link Aggregation Setting Window

Provisioning - Link Aggregation Setting

Refresh Add ETH LAG Add Multi LAG Delete LAG

Link Aggregation Group

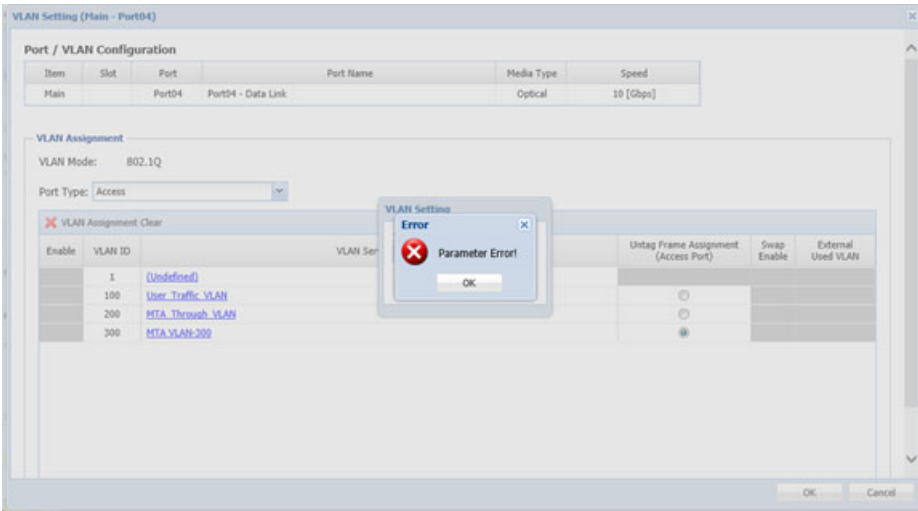
LAG	LAG Name	LAG Link Status	Mode	TX Interval	Revertive Mode	Distribution Rule
Multi GRP1	MTA-GRP	Link Up	Static			L1 Base

Link Aggregation Port

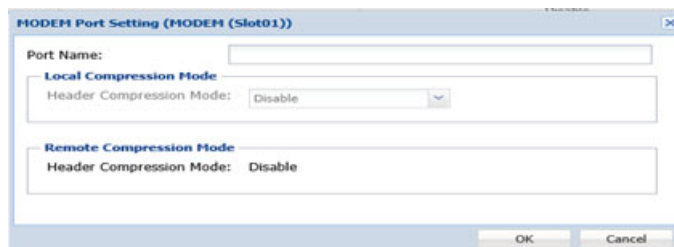
Item	Slot	Port	Port Name	Media Type	Speed	Duplex	VLAN ID	LAG	LAG Port Status	Port Role	Aggregation VLAN	Through VLAN
Main		Port02	Port02 - Relay Link	Optical	10 [Gbps]	Full	100,200	Multi GRP1	Active		300	200
Main		Port03					1					
Main		Port04	Port04 - Data Link	Optical	10 [Gbps]	Full	100					
MODEM	Slot01	Port01					100,200	Multi GRP1	Active			
MODEM	Slot02	Port01					100,200	Multi GRP1	Active			

Condition 3-3

- Aggregation VLAN cannot be assigned for user traffic or other service. Throws below Error.



- *After configuring MTA group, Header compression is fixed to disable on MODEM Interface.*

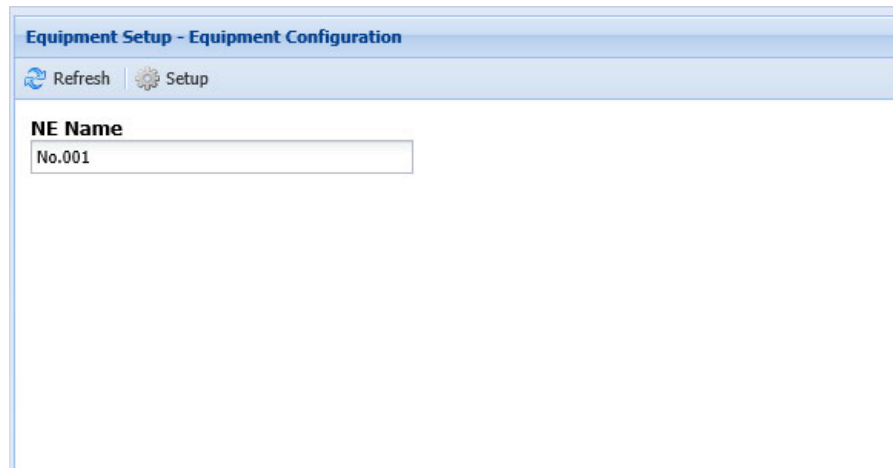


3.1.3.4 Detailed Configuration steps – NE3 and NE4

Procedure 3-2

1. Register MODEM RF1. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-15 Radio Configuration Window





The screenshot shows a web-based configuration window titled "Equipment Setup - Equipment Configuration". At the top, there are two buttons: "Refresh" (with a circular arrow icon) and "Setup" (with a gear icon). Below these buttons, the label "NE Name" is displayed above a text input field. The input field contains the text "No.001".

NOTE: Slave node used is EX/A, hence MODEM registration is not required.

2. Configure CS/Reference Modulation for the MODEM RF1. Refer **4.3 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-16 Radio Configuration Window

Equipment Setup - Radio Configuration	
 Refresh  Setup	
Current Status	
	MODEM (Slot01)
	1+0
	-
Channel Spacing	750MHz
Reference Modulation	16QAM
ETH Bandwidth [Mbps]	2328
TX Frequency [MHz]	83375.000
RX Frequency [MHz]	73375.000
Frame ID	1
TX Power Control	MTPC
TX Start Frequency [MHz]	83375.000
TX Stop Frequency [MHz]	85875.000
Frequency Step [MHz]	1.250
Shift Frequency [MHz]	10000.000
Upper / Lower	Upper
Sub Band	B
RF Frequency Type	TX & RX

3. Configure ETH port Port2 as 10G port. Refer **4.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-17 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage:

☒ Enable☐ Disable

Port Name:

Port02 - Relay Link

10GbE Usage:

☒ Enable☐ Disable

Media Type:

☐ Electrical☒ Optical

Speed:

10 [Gbps]

Duplex:

☒ Full

MDI / MDI-X:

☒ MDI☐ MDI-X

Flow Control:

☐ Enable☒ Disable

Sync ETH:

☐ Enable☒ Disable

LLDP Usage:

☐ Enable☒ Disable

LLDP Mode:

☒ Standard☐ Proprietary MAC

LLDP Port ID Subtype:

☒ MAC Address☐ Interface Name

ALS Usage:

☐ Enable☒ Disable

ALS Interval:

60 [s]

OK

Cancel

Figure 3-18 ETH Port Setting Window (1/2: on the leftmost)

Provisioning - ETH Function Setting - ETH Port Setting										
Refresh										
Item	Slot	Port	Port Usage	Port Name	SFP	Status				
						Link	Speed	Duplex	10GbE Usage	Media Type
Main		Port02	Enable	Port02 - Relay Link	10G BASE-SR	Link Up	10 [Gbps]	Full	Enable	Optical
		Port03	Disable							

Figure 3-19 ETH Port Setting Window (2/2: on the rightmost)

Setting - ETH Port Setting											
Setting											
10GbE Usage	Media Type	Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype	ALS Usage	ALS Interval
Enable	Optical	10 [Gbps]	Full		Disable	Disable	Disable			Disable	

4. Create VLAN IDs same as Through VLAN (VLAN Y) and Aggregation VLAN (VLAN Z) in Master (NE1 and NE2). Refer **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-20 ETH Function Setting - VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting **VLAN List**

+ Add VLAN ID - Delete VLAN ID

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Number of items per page: (1 - 256)

VLAN ID	VLAN Service Name
1	(Undefined)
200	MTA Through VLAN
300	Aggregation VLAN

- Associate VLAN Y and VLAN Z to ETH Port2 and VLAN Z to MODEM Port RF1. Refer **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-21 ETH Function Setting - VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting VLAN List

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item:

Port:

Number of items per page: (1 - 256)

Item	Slot	Port	Port Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port02	Port02 - Relay Link	200	Trunk	MTA Through VLAN	
Main		Port02	Port02 - Relay Link	300	Trunk	Aggregation VLAN	
Main		Port03		1	Access	(Undefined)	
MODEM	Slot01	Port01		200	Trunk	MTA Through VLAN	
MODEM	Slot01	Port01		300	Trunk	Aggregation VLAN	

- Create MEG with ETH-CCM enable, ETH-BN Tx-enable, BNM Server MEP as MODEM RF1. Refer **9.6.1.1 Add MEG Index in Set Network and System Provisioning** for details.

Figure 3-22 OAM MEG Setting (Modify) Window

OAM MEG Setting (Modify)

MEG Index:1

Maintenance Domain Name:MTA-MEG

Short MA Name:MEG-01

MEG Level:1

CCM:☒ Enable ☐ Disable

ETH-CC Period:10 [s]

CCM Priority:0

ETH-BN (TX)

BNM (TX):☒ Enable ☐ Disable

BNM Server MEP:MODEM (Slot01)

ETH-BN (TX) Period:10 [s]

BNM Priority:7

BNM Hold Time:1 [s]

ETH-BN (RX)

BNM (RX):☐ Enable ☒ Disable

ETH-BN (RX) Period:1 [s]

OK

Cancel

Figure 3-23 ETH OAM Setting Window (1/2: on the leftmost)

Provisioning - ETH Function Setting - ETH OAM Setting

Refresh

OAM MEP

OAM MIP

OAM MEG

Link OAM

Add MEG

Delete MEG

MEG Index	Maintenance Domain Name	Short MA Name	MEG Level	CCM	ETH-CC Period	CCM Priority
1	MTA-MEG	MEG-01	1	Enable	10 [s]	0

GG5-000559-02E

iPASOLINK EX Advanced: MTA ANNEXURE MANUAL

Figure 3-24 ETH OAM Setting Window (2/2: on the rightmost)

CCM Priority	ETH-BN (TX)					ETH-BN (RX)	
	BNM	BNM Server MEP	ETH-BN Period	BNM Priority	BNM Hold Time	BNM	ETH-BN Period
0	Enable	MODEM (Slot01)	10 [s]	7	1 [s]	Disable	

7. Create MEP on ETH Port2 using Through VLAN. Refer **9.6.2.1 Add MEP Index in Set Network and System Provisioning** for details.

Figure 3-25 OAM MEP Setting (Add) Window

MEP Index:

1

(1 - 128)

MEP ID:

2

(1 - 8191)

Item:

Main

Port:

Port02

ETH OAM Source MAC Address: 02:E2:00:10:98:02

Direction:

Up MEP

Down MEP

Enable	VLAN ID	VLAN Service Name
<input checked="" type="radio"/>	200	MTA_Through_VLAN

Enable	MEG Index	Maintenance Domain Name	Short MA Nan
<input checked="" type="radio"/>	1	MTA-MEG	MEG-01

Add Peer MEP

Enable	Peer MEP ID
<input checked="" type="checkbox"/>	1

OKCancel

Figure 3-26 ETH OAM Setting Window (1/3: on the leftmost)

Provisioning - ETH Function Setting - ETH OAM Setting

Refresh

OAM MEP OAM MIP OAM MEG Link OAM

+ Add MEP - Delete MEP

MEP Index	MEP ID	MEG Index	Maintenance Domain Name	Short MA Name	MEG Level	CCM
1	2	1	MTA-MEG	MEG-01	1	Enable

Figure 3-27 ETH OAM Setting Window (2/3: on the middle)

CCM	Direction	VLAN ID	VLAN Service Name	Item	Slot	Port
Enable	Down MEP	200	MTA_Through_VLAN	Main		Port02

Figure 3-28 ETH OAM Setting Window (3/3: on the rightmost)

Link OAM

Port	Peer MEP ID	ETH-BN (TX)						ETH-BN (RX)	
		BNM Server MEP	ETH-BN Period	BNM Priority	ETH-BN Nominal Bandwidth	ETH-BN Current Bandwidth	BNM Hold Time	ETH-BN Period Setting Value	ETH-BN Current Setting Value
Port02	1	MODEM (Slot01)	10 [s]	7	2328 [Mbps]	2328 [Mbps]	1 [s]		

Verify ETH-BN (Tx) shows ETH-Bandwidth of the slave MODEM configured at step 2

3.1.4 Alarm and Troubleshooting:

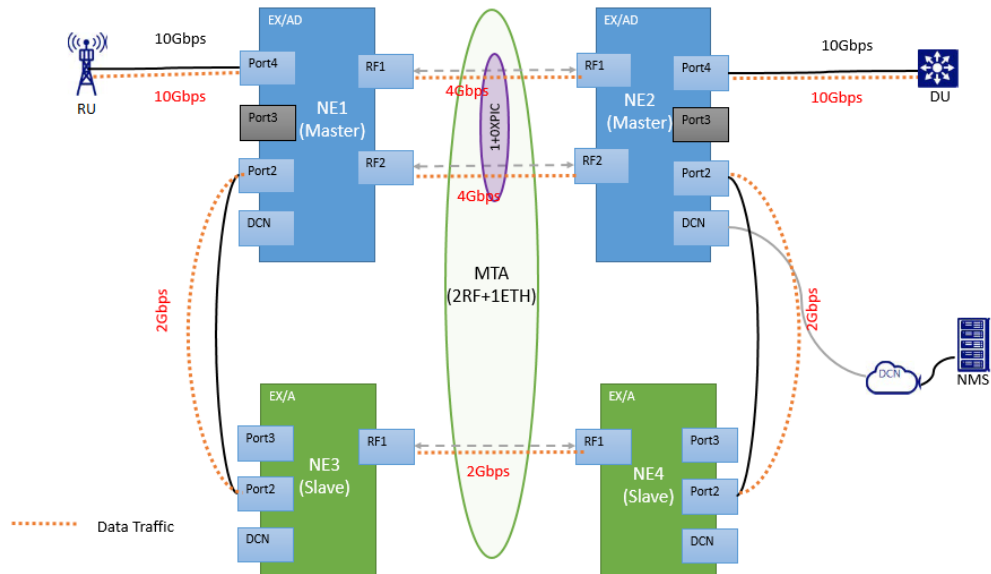
Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch

To Clear the Alarms, refer to **5.5 Trouble Clearing in Operation and Maintenance** for details.

3.1.5 Use Case Verification

Figure 3-29 Data Traffic Flow



1. Verify ETH-BN (Rx) on Master Node shows the ETH-BN received from MTA slave.

Figure 3-30 ETH OAM Setting - OAM MEP [on the rightmost on NE1]

Peer MEP ID	ETH-BN (TX)						ETH-BN (RX)	
	BNM Server MEP	ETH-BN Period	BNM Priority	ETH-BN Nominal Bandwidth	ETH-BN Current Bandwidth	BNM Hold Time	ETH-BN Period Setting Value	ETH-BN Current Bandwidth
2							10 [s]	2328 [Mbps]

ETH-BN received from MTA slave

2. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
3. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.

Condition 3-4

- QoS Shaper rate for MTA link is calculated based on below condition.

i) MTA setting with ETH-BN (Rx) enabled on MTA GRP:

MTA link Shaper rate = **MTA Master wireless link bandwidth** + **value received by ETH-BN (Rx) on Port2 from MTA slave**

NOTE: When ETH bandwidth is not received from port2 value "0" is used for calculation.

Provisioning - ETH Function Setting - QoS / Classification Setting

Refresh

Classify Setting | **Shaper Setting**

Edit Profile

QoS Shaper Setting List

Number of Queue: 8 Classes QoS | **VLAN Shaper** | Disable

Item	Slot	Port Shaper			Priority Shaper								
		Port	Shaper Rate[bps]	Profile	Drop Mode	Priority0	Priority1	Priority2	Priority3	Priority4	Priority5	Priority6	Priority7
Main		Port03	1000M	1Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP
		Port04	10000M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP
LAG		Multi GRP1	10000M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP

QoS Shaper rate

ii) MTA setting without ETH-BN (Rx) enabled on MTA GRP:

MTA link Shaper rate = **MTA Master wireless link bandwidth**

4. Perform TX mute on MODEM RF1 and MODEM RF2 on sender end Master [NE1].

Figure 3-31 MODEM Maintenance Control Window

Maintenance Control - MODEM Maintenance Control

Refresh

	XPIC GRP1 (MODEM) (Slot01/02)	
	1+0 XPIC	
	No.1	No.2
ATPC Manual Control [dBm]		
TX Mute Control	On	On
CW Control	Off	Off
Carrier Search	Off	Off
XPIC Reset	Auto	

5. Verify the QOS shaper on Master got updated with Slave Modem Bandwidth received via ETH-BNM.

Figure 3-32 QoS / Classification Setting Window

Provisioning - ETH Function Setting - QoS / Classification Setting

Refresh

Classify Setting Policier Setting **Shaper Setting**

Edit Profile

QoS Shaper Setting List

Number of Queue: 8 Classes QoS VLAN Shaper: Disable

Item	Slot	Port Shaper			Priority Shaper								
		Port	Shaper Rate[bps]	Profile	Drop Mode	Priority0	Priority1	Priority2	Priority3	Priority4	Priority5	Priority6	Priority7
Main		Port03	1000M	1Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP
		Port04	10000M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	
LAG		Multi GRP1	2300.296M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	

QoS shaper on Master updated with Slave Modem Bandwidth

6. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 and MODEM RF1 for traffic taken through relay link.

Debugging:

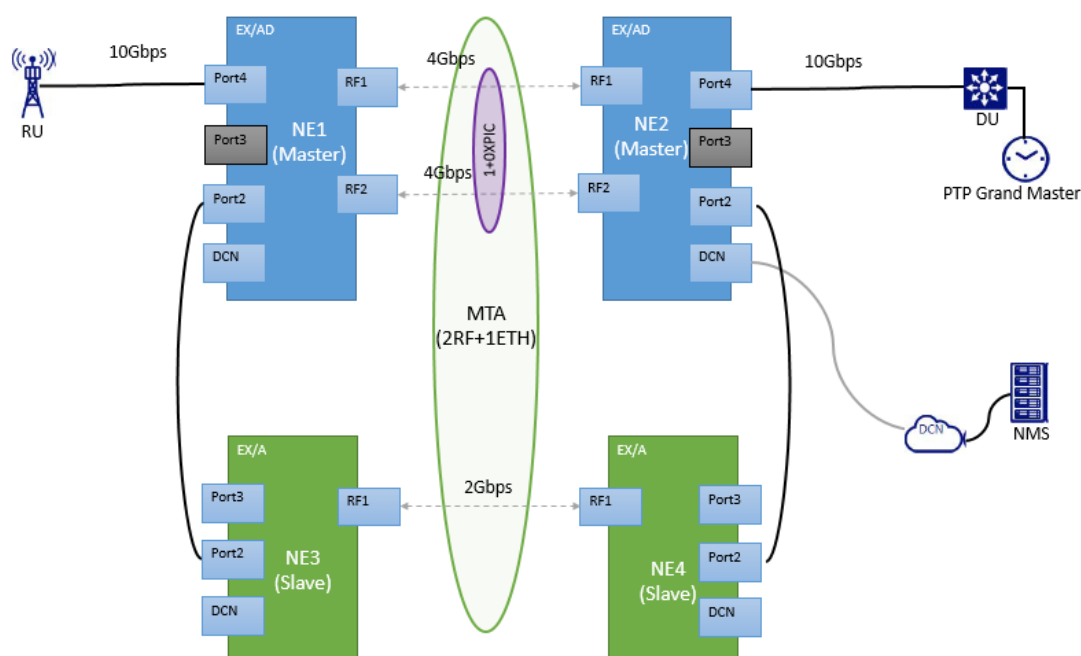
1. When the RX rate is not as per the TX rate, check below settings
 - a. MTA Direct link is up.
 - b. MTA Relay link is up.
 - c. Max Frame size in Master and Slave is set to 9600 bytes.
 - d. ETH-BN (Rx) is updated in Master from Slave.
 - e. Sender traffic TX rate = ETH Bandwidth in Master + ETH Bandwidth in Slave.
 - f. QOS Shaper setting for MTA GRP matches sender traffic TX rate.

3.2 Use case 2 - MTA [2 MODEM (XPIC) and 1 ETH port] with PTP

3.2.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology with PTP. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link with the PTP Packets from the RU.

3.2.2 Topology



3.2.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.2.3.1 Steps Summary - NE1 and NE2

1. Follow steps 1 to 8 in [3.1.3.1 Steps Summary - NE1 and NE2](#).
2. Configure PTP Mode to Boundary Clock (BC).
3. Configure Sync ETH on ETH Port 02.
4. Configure Equipment Clock mode to Slave and below timing sources.
 - a. Timing Source as PTP Line CLK in NE1
 - b. Timing Sources as Line CLK (MODEM) with MODEM RF1 and GbE line CLK1 with ETH Port02 in NE2
5. Create PTP VLAN to transmit PTP Packets in 'VLAN List'.
6. Associate the PTP VLAN to MTA GRP.
7. Create below PTP Logical interfaces
 - a. ETH Port04 with user traffic VLAN [Act as PTP slave, create only on NE1]
 - b. MTA GRP with PTP VLAN [Act as PTP Master]
 - c. MTA GRP with MTA Through VLAN [Act as PTP Master when MTA Direct link is down]

3.2.3.2 Steps Summary - NE3 and NE4

1. Follow steps 1 to 7 in [3.1.3.2 Steps Summary - NE3 and NE4](#).
2. Configure PTP Mode to Transparent Clock (TC).
3. Configure Sync ETH on ETH Port02.
4. Configure Equipment Clock mode to Slave and below timing sources
 - a. Timing Source as GbE Line CLK1 with ETH Port02 in NE3
 - b. Timing Source as Line CLK(MODEM) with MODEM RF1 in NE4

3.2.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-3

1. Follow steps 1 to 8 in [3.1.3.3 Detailed Configuration steps – NE1 and NE2](#).
2. Configure PTP Mode to Boundary Clock (BC). Refer to [10.2.2 Modify PTP Mode in Set Network and System Provisioning](#) for details.

Figure 3-33 Radio Configuration Window

Provisioning - Equipment Clock / Synchronization Setting - PTP Mode Setting

Refresh Modify PTP Mode Delete PTP Logical Interface

PTP Parameters

PTP Mode	PTP Profile	Clock Model	Transport Mode	Communication Mode	Domain Number	Priority1	Priority2	Local Priority
BC	IEEE 1588v2	PTP Only	PTP over Ethernet	Multicast	0	128	128	

3. Configure Sync ETH on ETH Port02. Refer to **9.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-34 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage: ☒ Enable ☐ Disable

Port Name: Port02 - Relay link

10GbE Usage: ☒ Enable ☐ Disable

Media Type: ☐ Electrical ☒ Optical

Speed: 10 [Gbps]

Duplex: ☒ Full

MDI / MDI-X: ☒ MDI ☐ MDI-X

Flow Control: ☐ Enable ☒ Disable

Sync ETH: ☒ Enable ☐ Disable

LLDP Usage: ☐ Enable ☒ Disable

LLDP Mode: ☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype: ☒ MAC Address ☐ Interface Name

ALS Usage: ☐ Enable ☒ Disable

ALS Interval: 60 [s]

OK Cancel

4. Configure Equipment Clock mode to Slave and below timing sources.
 - a. Timing Source as PTP Line CLK1 in NE1
 - b. Timing Sources as Line CLK (MODEM) with MODEM RF1 and GbE line CLK1 with ETH Port02 in NE2

Refer to **10.1.1 Specify/Modify Equipment Clock Setting in Set Network and System Provisioning** for details.

Figure 3-35 Equipment Clock Setting Window [In NE1]

Provisioning - Equipment Clock / Synchronization Setting - Equipment Clock Setting

Refresh Modify

Equipment CLK Mode	Slave
Equipment CLK Status	Locked
Selected CLK Source	REF1 : PTP Line CLK
Clock Source Selective Mode	QL Mode

No.	Timing Source	Slot	Port	Port Name	Priority Level	SSM Usage	Line SSM / Forced SSM Value	WTR Timer	Status
1	PTP Line CLK	Main			1	Used	QL-SEC		Normal
2	Not Entry							10 [s]	
3	Not Entry								

Figure 3-36 Equipment Clock Setting Window [In NE2]

Provisioning - Equipment Clock / Synchronization Setting - Equipment Clock Setting

Refresh Modify

Equipment CLK Mode	Slave
Equipment CLK Status	Locked
Selected CLK Source	REF1 : Line CLK (MODEM)
Clock Source Selective Mode	QL Mode

No.	Timing Source	Slot	Port	Port Name	Priority Level	SSM Usage	Line SSM / Forced SSM Value	WTR Timer	Status
1	Line CLK (MODEM)	Slot01	Port01		1	Used	QL-SEC		Normal
2	GbE Line CLK1	Main	Port02	Port02- Relay Link	2	Used	QL-SEC	10 [s]	Normal
3	Not Entry								

5. Create PTP VLAN to transmit PTP Packets in 'VLAN List'. Refer to **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-37 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting VLAN List

Add VLAN ID Delete VLAN ID

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Number of items per page: (1 - 256)

VLAN ID	VLAN Service Name
1	(Undefined)
100	User Traffic VLAN
111	(Undefined)
200	MTA Through VLAN
300	MTA VLAN-300
400	PTP VLAN

6. Associate the PTP VLAN to MTA GRP. Refer to **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-38 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting | VLAN List

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item:

Port:

Number of items per page: (1 - 256)

Item	Slot	Port	Port Name / LAG Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port03		1	Access	(Undefined)	
Main		Port04	Port04 - Data Link	100	Trunk	User Traffic VLAN	
LAG		Multi GRP1		100	Trunk	User Traffic VLAN	
LAG		Multi GRP1		200	Trunk	MTA Through VLAN	
LAG		Multi GRP1		400	Trunk	PTP VLAN	

Page 1 of 1

Displaying 1 - 8 of 8

7. Create below PTP Logical interfaces.

- ETH Port04 with user traffic VLAN [Act as PTP slave, create only on NE1]
- MTA GRP with PTP VLAN [Act as PTP Master]
- MTA GRP with MTA Through VLAN [Act as PTP Master when MTA Direct link is down]

Refer to **10.2.3 Add/Modify PTP Logical Interface in Set Network and System Provisioning** for details.

Figure 3-39 PTP Mode Setting Window [In NE1]

Provisioning - Equipment Clock / Synchronization Setting - PTP Mode Setting

Refresh Modify PTP Mode Delete PTP Logical Interface

PTP Parameters

PTP Mode	PTP Profile	Clock Model	Transport Mode	Communication Mode	Domain Number	Priority1	Priority2	Local Priority
BC	IEEE 1588v2	PTP Only	PTP over Ethernet	Multicast	0	128	128	

PTP Logical Interface

No.	Interface Name	IP Address	Subnet Mask	Local Priority	VLAN ID	Mapped Physical Port	Packet Rate Setting [fps]		
							Sync	Delay_Req	Announce
01	PTP_Slave_Port				100	ETH Port04 (Main)	16	16	1
02	PTP_Traffic_VLAN				400	Multi GRP1	16	16	1
03	PTP_Master_Through_VLAN				200	Multi GRP1	16	16	1
04									
05									

Figure 3-40 PTP Mode Setting Window [In NE2]

PTP Logical Interface

No.	Interface Name	IP Address	Subnet Mask	Local Priority	VLAN ID	Mapped Physical Port	Packet Rate Setting [fps]		
							Sync	Delay_Req	Announce
01	PTP_Slave_Traffic_VLAN				400	Multi GRP1	16	16	1
02	PTP_Slave_Through_VLAN				200	Multi GRP1	16	16	1
03									
04									
05									

3.2.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-4

1. Follow steps 1 to 7 in [3.1.3.4 Detailed Configuration steps – NE3 and NE4](#).
2. Configure PTP Mode to Transparent Clock (TC). Refer to [10.2.2 Modify PTP Mode in Set Network and System Provisioning](#) for details.

Figure 3-41 PTP Mode Setting Window

PTP Parameters

PTP Mode	PTP Profile	Clock Model	Transport Mode	Communication Mode	Domain Number	Priority1	Priority2	Local Priority
TC	IEEE 1588v2							

PTP Logical Interface

No.	Interface Name	IP Address	Subnet Mask	Local Priority	VLAN ID	Mapped Physical Port	Packet Rate Setting [fps]	
							Sync	Delay_Req
01								
02								
03								
04								
05								
06								

3. Configure Sync ETH on ETH Port02. Refer to [9.3 ETH Port Setting in Set Network and System Provisioning](#) for details.

Figure 3-42 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage: ☒ Enable ☐ Disable

Port Name: Port02 - Relay Link

10GbE Usage: ☒ Enable ☐ Disable

Media Type: ☐ Electrical ☒ Optical

Speed: 10 [Gbps]

Duplex: ☒ Full

MDI / MDI-X: ☒ MDI ☐ MDI-X

Flow Control: ☐ Enable ☒ Disable

Sync ETH: ☒ Enable ☐ Disable

LLDP Usage: ☐ Enable ☒ Disable

LLDP Mode: ☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype: ☒ MAC Address ☐ Interface Name

ALS Usage: ☐ Enable ☒ Disable

ALS Interval: 60 [s]

OK Cancel

4. Configure Equipment Clock mode to Slave and below timing sources
 - a. Timing Source as GbE Line CLK1 with ETH Port02 in NE3

b. Timing Source as Line CLK (MODEM) with MODEM RF1 in NE4

Refer to **10.1.1 Specify/Modify Equipment Clock Setting in Set Network and System Provisioning** for details.

Figure 3-43 Equipment Clock Setting Window [In NE3]

Provisioning - Equipment Clock / Synchronization Setting - Equipment Clock Setting

Refresh Modify

Equipment CLK Mode	Slave
Equipment CLK Status	Locked
Selected CLK Source	REF1 : GbE Line CLK1
Clock Source Selective Mode	QL Mode

No.	Timing Source	Slot	Port	Port Name	Priority Level	SSM Usage	Line SSM / Forced SSM Value	WTR Timer	Status
1	GbE Line CLK1	Main	Port02	Port02 - Relay Link	1	Used	QL-SEC		Normal
2	Not Entry							10 [s]	
3	Not Entry								

Figure 3-44 Equipment Clock Setting Window [In NE4]

Provisioning - Equipment Clock / Synchronization Setting - Equipment Clock Setting

Refresh Modify

Equipment CLK Mode	Slave
Equipment CLK Status	Locked
Selected CLK Source	REF1 : Line CLK (MODEM)
Clock Source Selective Mode	QL Mode

No.	Timing Source	Slot	Port	Port Name	Priority Level	SSM Usage	Line SSM / Forced SSM Value	WTR Timer	Status
1	Line CLK (MODEM)	Slot01	Port01		1	Used	QL-SEC		Normal
2	Not Entry							10 [s]	
3	Not Entry								

3.2.4 Alarm and Troubleshooting:

Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch
5. PTP Mode Setting Mismatch

To Clear the Alarms, refer to **5.5 Trouble Clearing in Operation and Maintenance** for details.

3.2.5 Use Case Verification

Figure 3-45 Data Traffic Flow

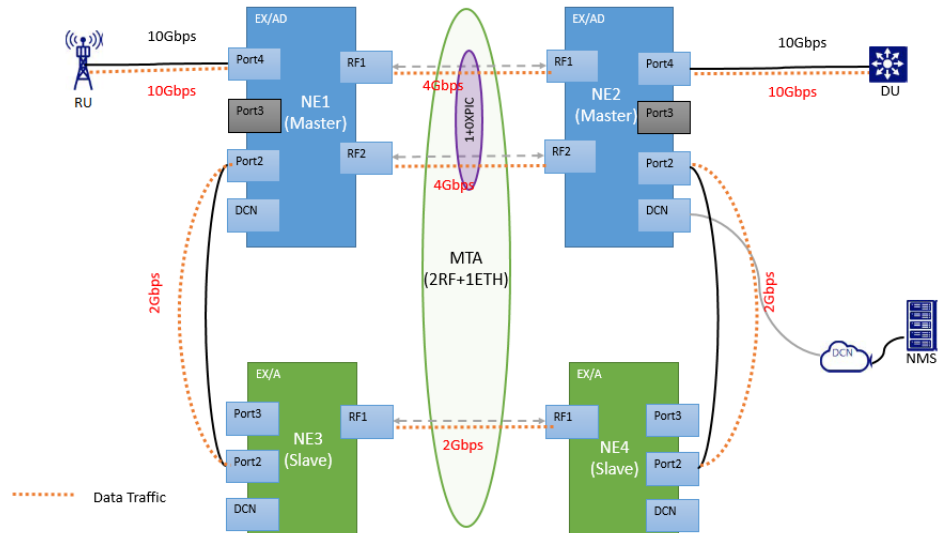
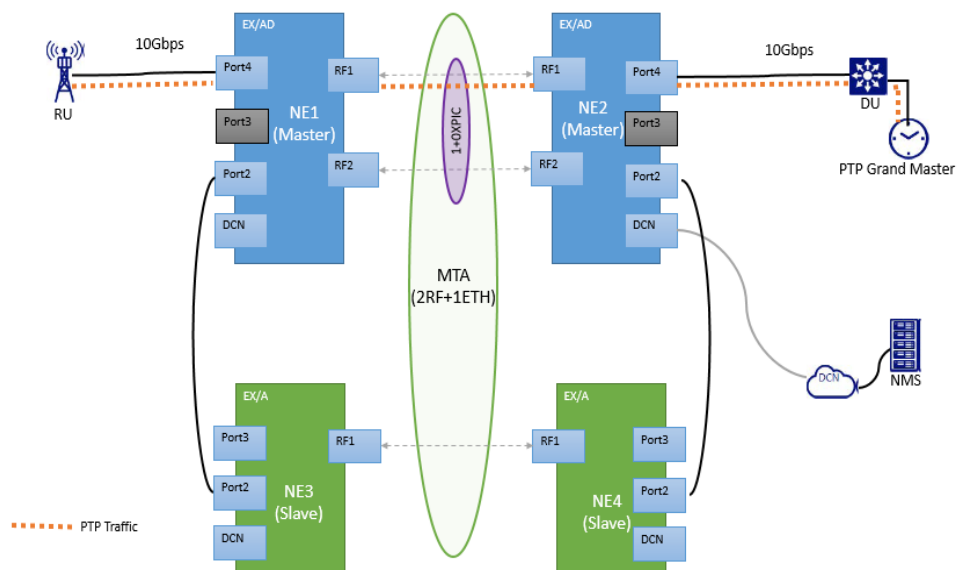


Figure 3-46 PTP Traffic Flow



1. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
2. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
3. Check PTP synchronization status in PTP Domain Setting.
 - a. PTP Clock Quality Level should be QL-SEC

Figure 3-47 PTP Domain Setting Window [In NE1]

Provisioning - Equipment Clock / Synchronization Setting - PTP Domain Setting

Refresh Delete PTP Master Entry

PTP Node Information

PTP Data/Time	PTP Clock ID	PTP Clock Quality Level	PTP Clock Status
2021/08/12 19:24:08	D4:92:34:FF:FE:31:0E:E0	QL-SEC	

Grandmaster Information

No.	Master Name	Clock ID	Clock Class	Priority1	Priority2	Clock Accuracy
1		AC:DE:48:00:00:00:00:00	6	128	128	100 [ns]

PTP Master List

No.	Master Name	Logical Interface No.	Clock ID	Clock Class	PTP Source Status	PTP Alarm	Local Priority	PTP Master IP Address	PTP SW Control	Lock Out
1		No.1	AC:DE:48:00:00:00:00:00	6	Selected					
2										
3										
4										
5										

b. PTP Source Status should be Selected for PTP logical interface 1

Figure 3-48 PTP Domain Setting Window [In NE2]

Provisioning - Equipment Clock / Synchronization Setting - PTP Domain Setting

Refresh Delete PTP Master Entry

PTP Node Information

PTP Data/Time	PTP Clock ID	PTP Clock Quality Level	PTP Clock Status
2021/08/12 19:56:47	D4:92:34:FF:FE:31:0F:00	QL-SEC	

Grandmaster Information

No.	Master Name	Clock ID	Clock Class	Priority1	Priority2	Clock Accuracy
1		AC:DE:48:00:00:00:00:00	6	128	128	100 [ns]

PTP Master List

No.	Master Name	Logical Interface No.	Clock ID	Clock Class	PTP Source Status	PTP Alarm	Local Priority	PTP Master IP Address	PTP SW Control	Lock Out
1		No.1	D4:92:34:FF:FE:31:0E:E0	6	Selected					
2		No.2	D4:92:34:FF:FE:31:0E:E0	6	Not Selected					
3										
4										
5										

c. When the MODEM Link [MTA direct link] is down, PTP Logical interface 2 should be Selected as PTP Source [In NE2]

Figure 3-49 PTP Traffic Flow when MTA Direct link is Down

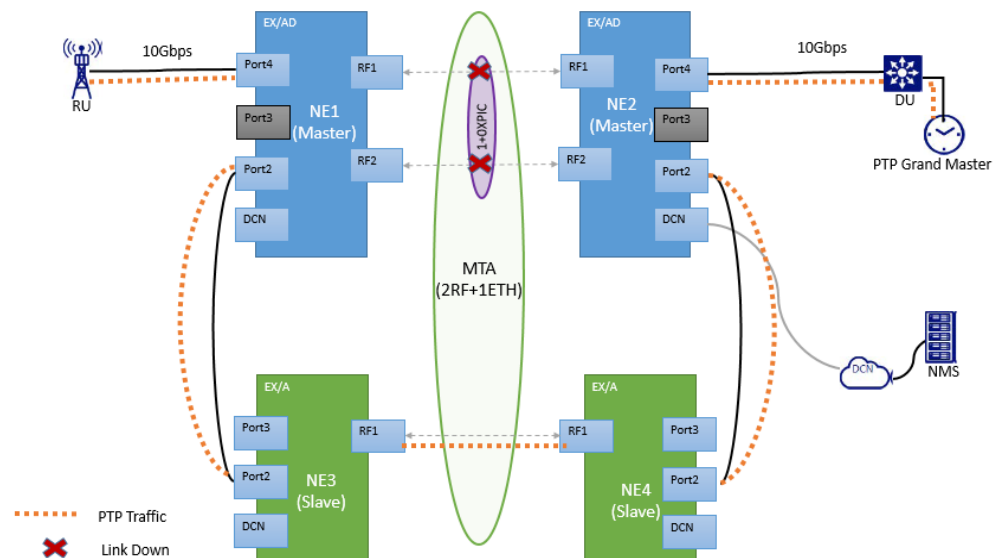


Figure 3-50 PTP Domain Setting Window [In NE2]

Provisioning - Equipment Clock / Synchronization Setting - PTP Domain Setting

Refresh Delete PTP Master Entry

PTP Node Information

PTP Data/Time	PTP Clock ID	PTP Clock Quality Level	PTP Clock Status
2021/08/13 12:26:05	D4:92:34:FF:FE:31:0F:00	QL-SEC	

Grandmaster Information

No.	Master Name	Clock ID	Clock Class	Priority1	Priority2	Clock Accuracy
1		AC:DE:48:00:00:00:00:00	6	128	128	100 [ns]

PTP Master List

No.	Master Name	Logical Interface No.	Clock ID	Clock Class	PTP Source Status	PTP Alarm	Local Priority	PTP Master IP Address	PTP SW Control	Lock Out
1		No.2	D4:92:34:FF:FE:31:0E:E0	6	Selected					
2										
3										
4										
5										

Condition 3-5

- At the time on deleting MTA setting, the least MODEM Port associated in the MTA group will take over the configuration of VLAN, ETH-OAM, QOS, Static FDB, RSTP/MSTP, LLF and PTP-BC of the Multi group logical interface. The remaining ports (MODEM and ETH Port2) will be configured with default setting.

Example 1:

Refer **Figure 3-38 VLAN Setting Window** for MTA GRP VLAN Setting. Below figure shows MODEM RF1 taking over the configuration of VLAN and port2 configured to default setting after MTA GRP is deleted.

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting **VLAN List**

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item:

Port:

Number of items per page: (1 - 256)

Item	Slot	Port	Port Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port02	Port02 - Relay link	1	Access	(Undefined)	
Main		Port03		1	Access	(Undefined)	
Main		Port04	Port04 - Data Link	100	Trunk	User Traffic VLAN	
MODEM	Slot01	Port01		100	Trunk	User Traffic VLAN	
MODEM	Slot01	Port01		200	Trunk	MTA Through VLAN	
MODEM	Slot01	Port01		400	Trunk	PTP VLAN	
MODEM	Slot02	Port01		1	Trunk	(Undefined)	
PTP				100	Trunk	User Traffic VLAN	
PTP				200	Trunk	MTA Through VLAN	
PTP				400	Trunk	PTP VLAN	

Page 1 of 1

Displaying 1 - 10 of 10

Example 2:

Refer **Figure 3-39 PTP Mode Setting Window [In NE1]** for PTP Logical interfaces with MTA GRP.

Below figure shows MODEM RF1 taking over the configuration of PTP Logical interfaces after MTA GRP is deleted.

Provisioning - Equipment Clock / Synchronization Setting - PTP Mode Setting

Refresh

Modify PTP Mode

Delete PTP Logical Interface

PTP Parameters

PTP Mode	PTP Profile	Clock Model	Transport Mode	Communication Mode	Domain Number	Priority1	Priority2	Local Priority
BC	IEEE 1588v2	PTP Only	PTP over Ethernet	Multicast	0	128	128	

PTP Logical Interface

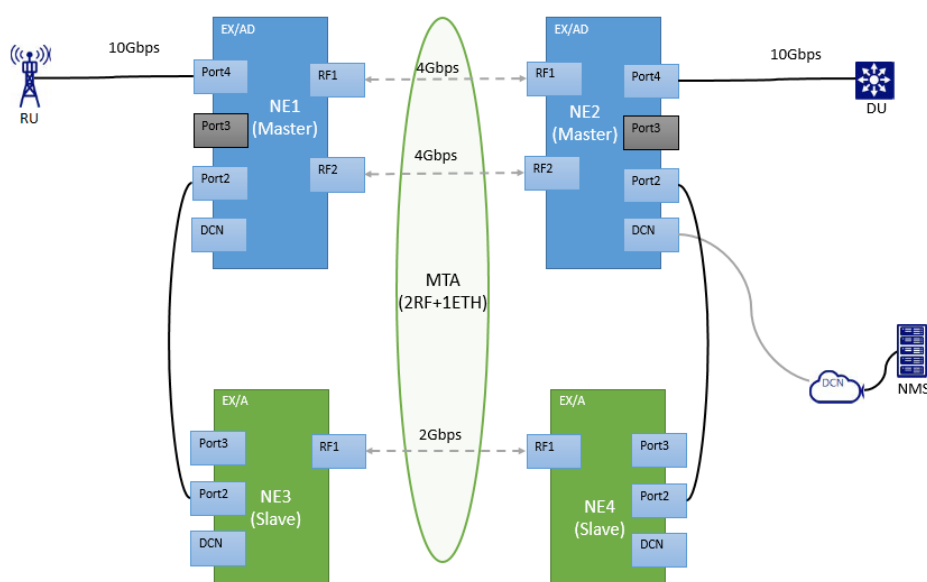
No.	Interface Name	IP Address	Subnet Mask	Local Priority	VLAN ID	Mapped Physical Port	Packet Rate Setting [fps]		
							Sync	Delay_Req	
01	PTP_Slave_Port				100	ETH Port04 (Main)	16	16	
02	PTP_Traffic_VLAN				400	MODEM (Slot01)	16	16	
03	PTP_Master_Through_VLAN				200	MODEM (Slot01)	16	16	
04									
05									

3.3 Use case 3 - MTA with 2 MODEM (not XPIC) and 1 ETH port

3.3.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology with modems without XPIC. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

3.3.2 Topology



3.3.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.3.3.1 Steps Summary - NE1 and NE2

1. Register MODEM RF1, RF2.
2. Configure CS/Reference Modulation for the MODEM RF1, RF2.
3. Follow steps 3 to 8 in [3.1.3.1 Steps Summary - NE1 and NE2](#).

3.3.3.2 Steps Summary - NE3 and NE4

1. Follow steps 1 to 7 in [3.1.3.2 Steps Summary - NE3 and NE4](#).

3.3.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-5

- 1. Register MODEM RF1, RF2. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-51 Equipment Configuration Window

Equipment Setup - Equipment Configuration

Refresh

Setup

NE Name

No.001

Equipment Configuration

MODEM

MODEM

MODEM / XPIC Configuration

Slot No.	1	2
XPIC GRP		

- 2. Configure CS/Reference Modulation for the MODEM RF1, RF2. Refer **4.3 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-52 Radio Configuration Window

Equipment Setup - Radio Configuration		
Refresh Setup		
Current Status		
	MODEM (Slot01)	MODEM (Slot02)
	1+0	1+0
	-	-
Channel Spacing	750MHz	750MHz
Reference Modulation	128QAM	128QAM
ETH Bandwidth [Mbps]	4075	4075
TX Frequency [MHz]	71125.000	0.000
RX Frequency [MHz]	81125.000	0.000
Frame ID	1	18
TX Power Control	MTPC	MTPC
TX Start Frequency [MHz]	71125.000	71125.000
TX Stop Frequency [MHz]	75875.000	75875.000
Frequency Step [MHz]	1.250	1.250
Shift Frequency [MHz]	10000.000	10000.000
Upper / Lower	Lower	Lower
Sub Band	C	C
RF Frequency Type	TX & RX	TX & RX
Polarization	Vertical	Horizontal

- Follow steps 3 to 8 in [3.1.3.3 Detailed Configuration steps – NE1 and NE2](#).

3.3.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-6

- Follow steps 1 to 7 in [3.1.3.4 Detailed Configuration steps – NE3 and NE4](#)

3.3.4 Alarm and Troubleshooting:

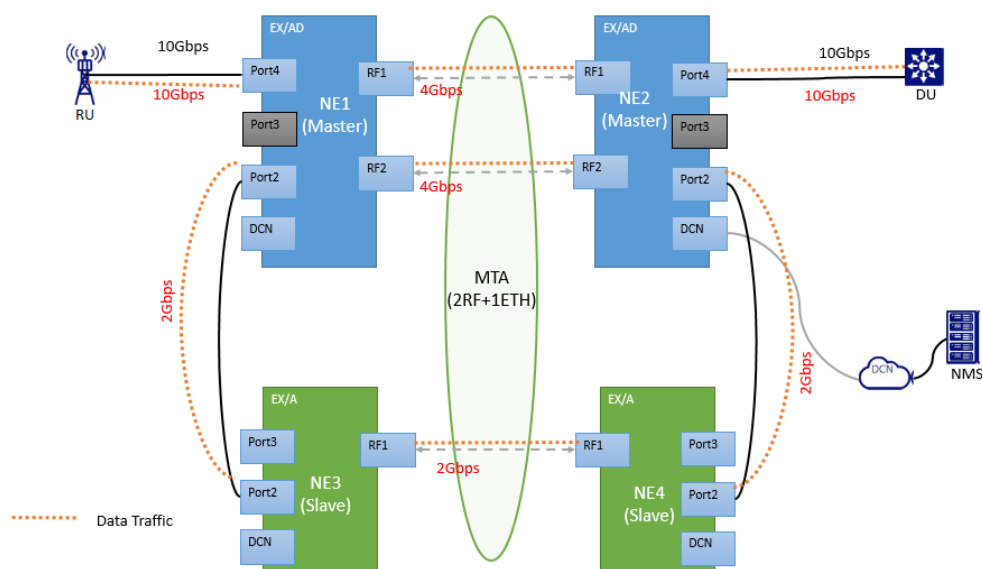
Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch
5. PTP Mode Setting Mismatch

To Clear the Alarms, refer to [5.5 Trouble Clearing in Operation and Maintenance](#) for details.

3.3.5 Use Case Verification

Figure 3-53 Data Traffic Flow



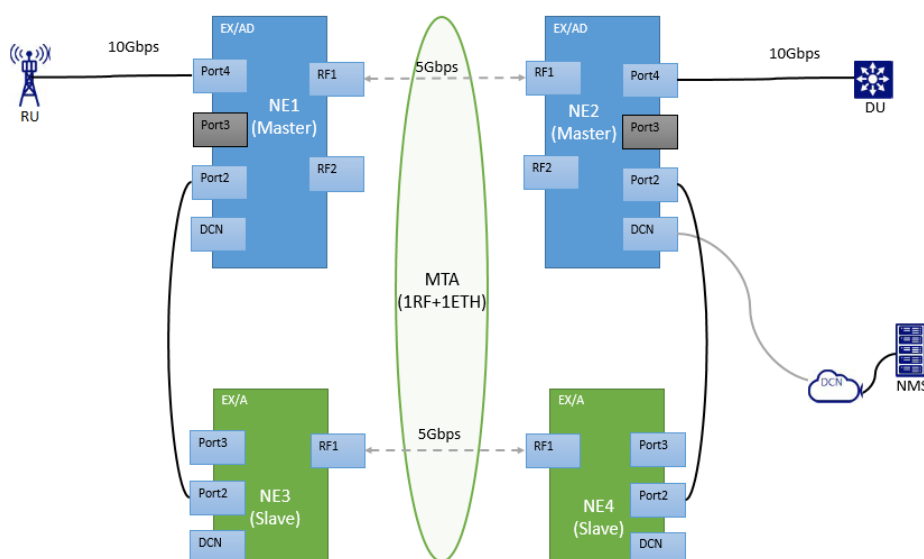
1. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
2. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.

3.4 Use case 4 - MTA with 1 MODEM and 1 ETH port

3.4.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology with 1 MODEM and 1 ETH port. Below topology represent Multi Traffic Aggregation of one Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

3.4.2 Topology



3.4.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.4.3.1 Steps Summary - NE1 and NE2

1. Register MODEM RF1.
2. Configure CS/Reference Modulation for the MODEM RF1.
3. Follow steps 3 to 8 in [3.1.3.1 Steps Summary - NE1 and NE2](#).

3.4.3.2 Steps Summary - NE3 and NE4

1. Register MODEM RF1.
2. Configure CS/Reference Modulation for the MODEM RF1.
3. Follow steps 3 to 7 in [3.1.3.2 Steps Summary - NE3 and NE4](#).

3.4.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-7

1. Register MODEM RF1. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-54 Equipment Configuration Window

Equipment Setup - Equipment Configuration				
Refresh Setup				
NE Name No.001				
Equipment Configuration				
<table border="1"> <tr> <td>MODEM</td> </tr> <tr> <td>Not Used</td> </tr> </table>			MODEM	Not Used
MODEM				
Not Used				
MODEM / XPIC Configuration				
Slot No.	1	2		
XPIC GRP				


Condition 3-6

- In case of setting MTA with one MODEM and ETH port, other MODEM should be set to "Not Used" as shown in **Figure 3-54 Equipment Configuration Window**.
- It is recommended to change the Equipment Configuration before creating MTA GRP as the Configuration cannot be changed when MTA GRP is created as shown below.

Equipment Configuration - Step2 Setting of Equipment Slot				
Current Setting				
NE Name No.001				
Equipment Configuration				
<table border="1"> <tr> <td>MODEM</td> </tr> <tr> <td>MODEM</td> </tr> </table>			MODEM	MODEM
MODEM				
MODEM				
MODEM / XPIC Configuration				
Slot No.	1	2		
XPIC GRP				
New Setting				
NE Name No.001				
Equipment Configuration				
<table border="1"> <tr> <td>MODEM</td> </tr> <tr> <td>MODEM</td> </tr> </table>			MODEM	MODEM
MODEM				
MODEM				
MODEM / XPIC Configuration				
Slot No.	1	2		
XPIC GRP				

2. Configure CS/Reference Modulation for the MODEM RF1. Refer **4.3 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-55 Radio Configuration Window

Equipment Setup - Radio Configuration	
 Refresh  Setup	
Current Status	
	MODEM (Slot01)
	1+0
	-
Channel Spacing	1000MHz
Reference Modulation	128QAM
ETH Bandwidth [Mbps]	5496
TX Frequency [MHz]	71125.000
RX Frequency [MHz]	81125.000
Frame ID	1
TX Power Control	MTPC
TX Start Frequency [MHz]	71125.000
TX Stop Frequency [MHz]	75875.000
Frequency Step [MHz]	1.250
Shift Frequency [MHz]	10000.000
Upper / Lower	Lower
Sub Band	C
RF Frequency Type	TX & RX
Polarization	Vertical

3. Follow steps 3 to 8 in **3.1.3.3 Detailed Configuration steps – NE1 and NE2**.

3.4.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-8

1. Follow step 1 in [3.1.3.4 Detailed Configuration steps – NE3 and NE4](#).
2. Configure CS/Reference Modulation for the MODEM RF1. Refer [4.3 Radio Configuration in Set Network and System Provisioning](#) for details.

Figure 3-56 Radio Configuration Window

Equipment Setup - Radio Configuration	
Refresh Setup	
Current Status	
	MODEM (Slot01)
	1+0
	-
Channel Spacing	750MHz
Reference Modulation	256QAM
ETH Bandwidth [Mbps]	4657
TX Frequency [MHz]	83375.000
RX Frequency [MHz]	73375.000
Frame ID	1
TX Power Control	MTPC
TX Start Frequency [MHz]	83375.000
TX Stop Frequency [MHz]	85875.000
Frequency Step [MHz]	1.250
Shift Frequency [MHz]	10000.000
Upper / Lower	Upper
Sub Band	B
RF Frequency Type	TX & RX

3. Follow steps 3 to 7 in [3.1.3.4 Detailed Configuration steps – NE3 and NE4](#).

3.4.4 Alarm and Troubleshooting:

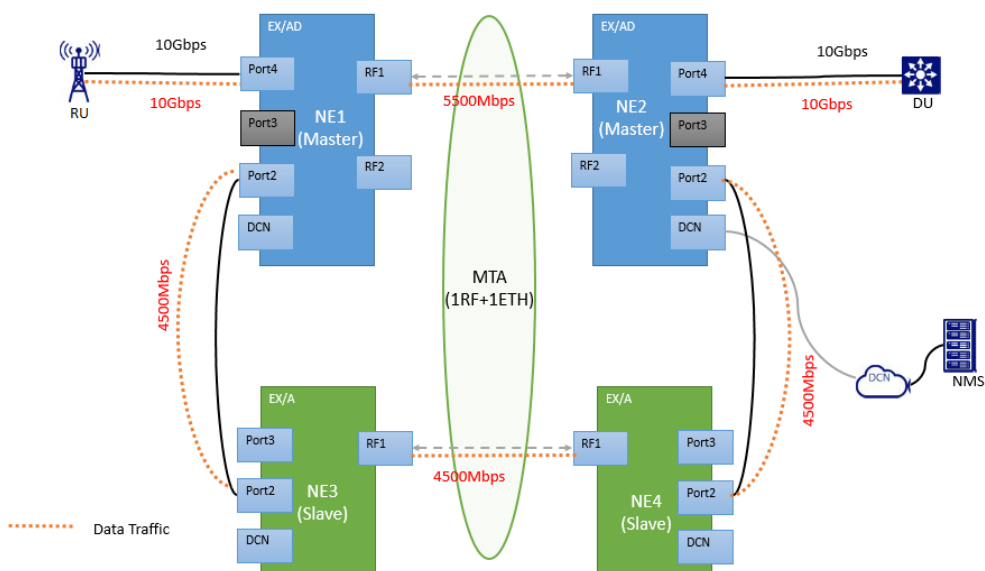
Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch

To Clear the Alarms, refer to [5.5 Trouble Clearing in Operation and Maintenance](#) for details.

3.4.5 Use Case Verification

Figure 3-57 Data Traffic Flow



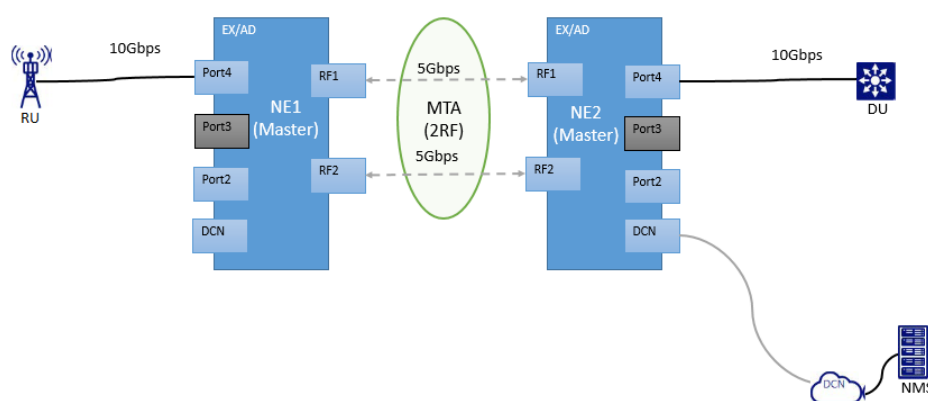
1. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
2. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.

3.5 Use case 5 - MTA with 2 MODEMs only

3.5.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology with 2 MODEMs only. Below topology represent Multi Traffic Aggregation of two Wireless link only. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

3.5.2 Topology



3.5.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.5.3.1 Steps Summary - NE1 and NE2

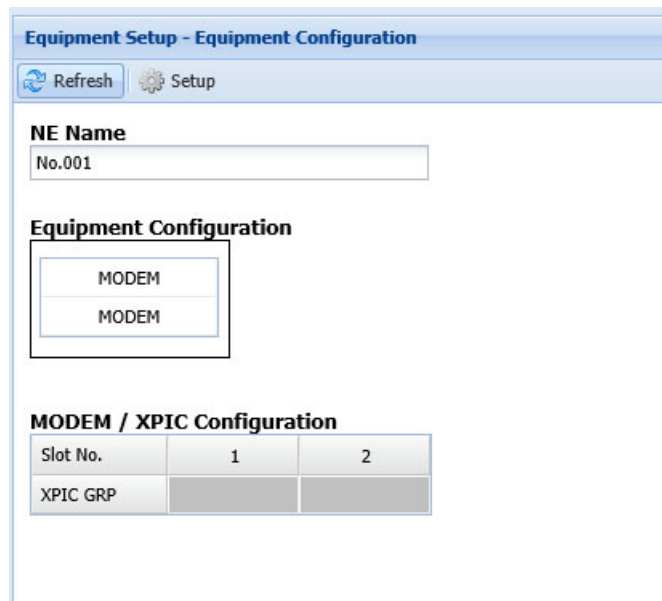
1. Register MODEM RF1, RF2.
2. Configure CS/Reference Modulation for the MODEM RF1, RF2.
3. Configure ETH port Port4 as 10G port.
4. Create user traffic VLAN (VLAN X).
5. Associate user traffic VLAN to ETH Port4 and MODEM Ports RF1 and RF2.
6. Create MTA GRP with MODEM Ports RF1, RF2.

3.5.3.2 Detailed Configuration steps - NE1 and NE2

Procedure 3-9

1. Register MODEM RF1, RF2. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-58 Equipment Configuration Window





The screenshot shows a web-based configuration window titled "Equipment Setup - Equipment Configuration". At the top, there are two buttons: "Refresh" (with a circular arrow icon) and "Setup" (with a gear icon). Below these buttons, the "NE Name" is displayed as "No.001" in a text field. Under the "Equipment Configuration" section, there is a list box containing two entries, both labeled "MODEM". At the bottom, the "MODEM / XPIC Configuration" section contains a table with two columns for slot numbers 1 and 2, and two rows for "Slot No." and "XPIC GRP".

Slot No.	1	2
XPIC GRP		

2. Configure CS/Reference Modulation for the MODEM RF1, RF2. Refer **4.3 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-59 Radio Configuration Window

Equipment Setup - Radio Configuration		
 Refresh  Setup		
Current Status		
	MODEM (Slot01)	MODEM (Slot02)
	1+0	1+0
	-	-
Channel Spacing	1000MHz	1000MHz
Reference Modulation	128QAM	128QAM
ETH Bandwidth [Mbps]	5496	5496
TX Frequency [MHz]	71125.000	71125.000
RX Frequency [MHz]	81125.000	81125.000
Frame ID	1	1
TX Power Control	MTPC	MTPC
TX Start Frequency [MHz]	71125.000	71125.000
TX Stop Frequency [MHz]	75875.000	75875.000
Frequency Step [MHz]	1.250	1.250
Shift Frequency [MHz]	10000.000	10000.000
Upper / Lower	Lower	Lower
Sub Band	C	C
RF Frequency Type	TX & RX	TX & RX
Polarization	Vertical	Horizontal

3. Configure ETH port Port4 as 10G port. Refer **4.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-60 ETH Port Setting (Main - Port04) Window

ETH Port Setting (Main - Port04)

Port Usage: ☒ Enable ☐ Disable

Port Name:

10GbE Usage: ☒ Enable ☐ Disable

Media Type: ☐ Electrical ☒ Optical

Speed:

Duplex: ☒ Full

MDI / MDI-X: ☒ MDI ☐ MDI-X

Flow Control: ☐ Enable ☒ Disable

Sync ETH: ☐ Enable ☒ Disable

LLDP Usage: ☐ Enable ☒ Disable

LLDP Mode: ☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype: ☒ MAC Address ☐ Interface Name

ALS Usage: ☐ Enable ☒ Disable

ALS Interval:

OK Cancel

Figure 3-61 ETH Port Setting Window (1/2: on the leftmost)

Provisioning - ETH Function Setting - ETH Port Setting											
Refresh											
Item	Slot	Port	Port Usage	Port Name	SFP	Status			10GbE Usage	Media Type	Speed
						Link	Speed	Duplex			
Main		Port02	Disable	Port02 - Relay Link							
		Port03	Disable								
		Port04	Enable	Port04 - Data Link	10G BASE-SR	Link Up	10 [Gbps]	Full	Enable	Optical	10 [Gbps]

Figure 3-62 ETH Port Setting Window (2/2: on the rightmost)

Setting									
Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype	ALS Usage	ALS Interval
10 [Gbps]	Full		Disable	Disable	Disable			Disable	

4. Create user traffic VLAN (VLAN X). Refer **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-63 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting **VLAN List**

+ Add VLAN ID - Delete VLAN ID

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Number of items per page: (1 - 256)

VLAN ID	VLAN Service Name
1	(Undefined)
100	User Traffic VLAN

5. Associate user traffic VLAN to ETH Port4 and MODEM Ports RF1 and RF2. Refer **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-64 VLAN Setting Window

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting **VLAN List**

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item:

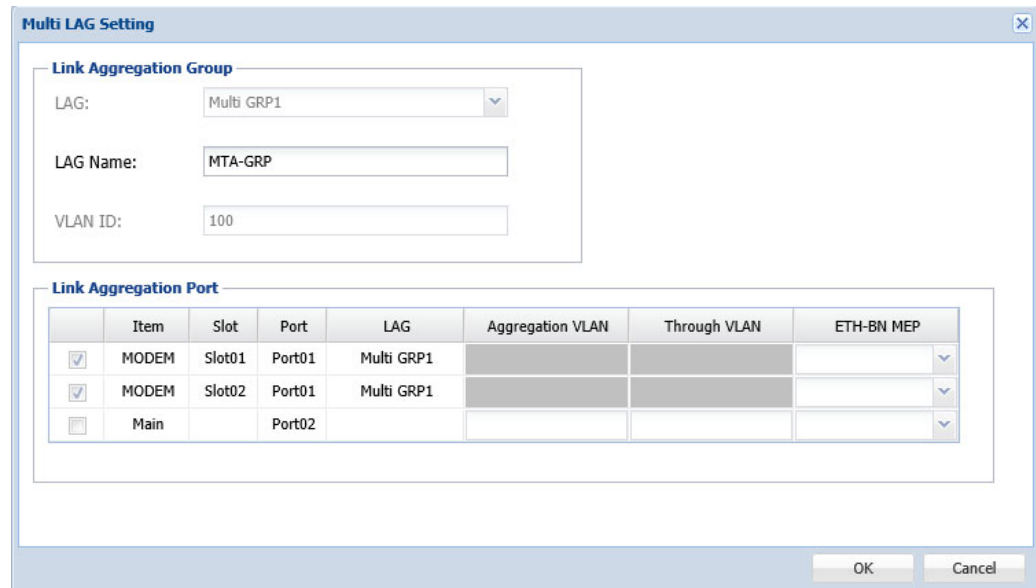
Port:

Number of items per page: (1 - 256)

Item	Slot	Port	Port Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port02	Port02 - Relay link	1	Access	(Undefined)	
Main		Port03		1	Access	(Undefined)	
Main		Port04	Port04 - Data Link	100	Trunk	User Traffic VLAN	
MODEM	Slot01	Port01		100	Trunk	User Traffic VLAN	
MODEM	Slot02	Port01		100	Trunk	User Traffic VLAN	

6. Create MTA GRP with MODEM Ports RF1, RF2. Refer **8.2.3 Add Multi LAG in Set Network and System Provisioning** for details.

Figure 3-65 Multi LAG Setting Window



The Multi LAG Setting window is divided into two main sections: Link Aggregation Group and Link Aggregation Port.

Link Aggregation Group

LAG: Multi GRP1 (dropdown menu)

LAG Name: MTA-GRP (text field)

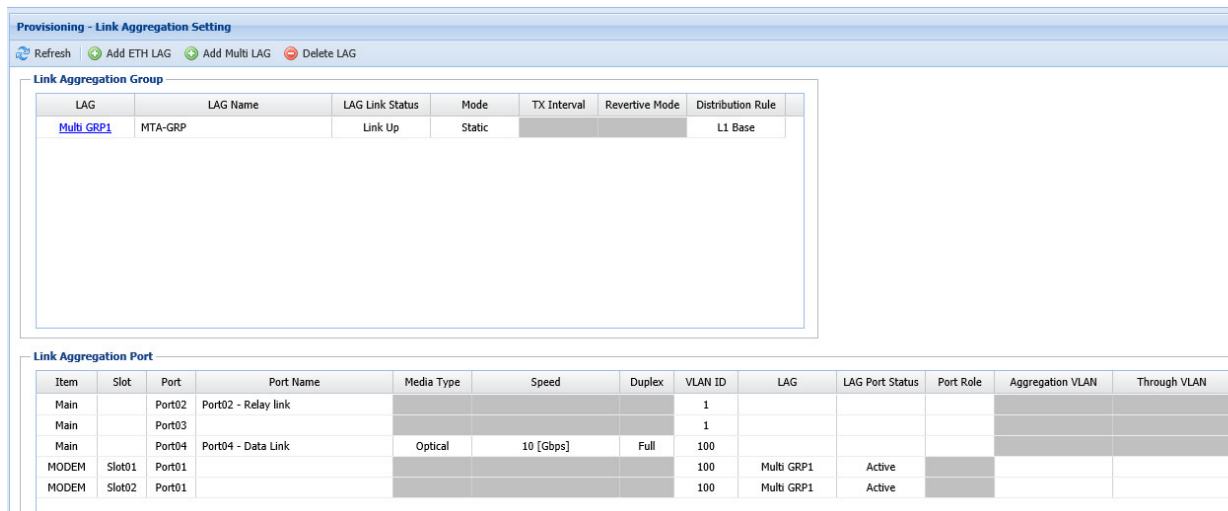
VLAN ID: 100 (text field)

Link Aggregation Port

	Item	Slot	Port	LAG	Aggregation VLAN	Through VLAN	ETH-BN MEP
<input checked="" type="checkbox"/>	MODEM	Slot01	Port01	Multi GRP1			
<input checked="" type="checkbox"/>	MODEM	Slot02	Port01	Multi GRP1			
<input type="checkbox"/>	Main		Port02				

OK Cancel

Figure 3-66 Link Aggregation Setting Window



The Link Aggregation Setting window shows the configuration for the Link Aggregation Group and the Link Aggregation Port.

Provisioning - Link Aggregation Setting

Refresh Add ETH LAG Add Multi LAG Delete LAG

Link Aggregation Group

LAG	LAG Name	LAG Link Status	Mode	TX Interval	Revertive Mode	Distribution Rule
Multi GRP1	MTA-GRP	Link Up	Static			L1 Base

Link Aggregation Port

Item	Slot	Port	Port Name	Media Type	Speed	Duplex	VLAN ID	LAG	LAG Port Status	Port Role	Aggregation VLAN	Through VLAN
Main		Port02	Port02 - Relay link				1					
Main		Port03					1					
Main		Port04	Port04 - Data Link	Optical	10 [Gbps]	Full	100					
MODEM	Slot01	Port01					100	Multi GRP1	Active			
MODEM	Slot02	Port01					100	Multi GRP1	Active			

3.5.4 Alarm and Troubleshooting:

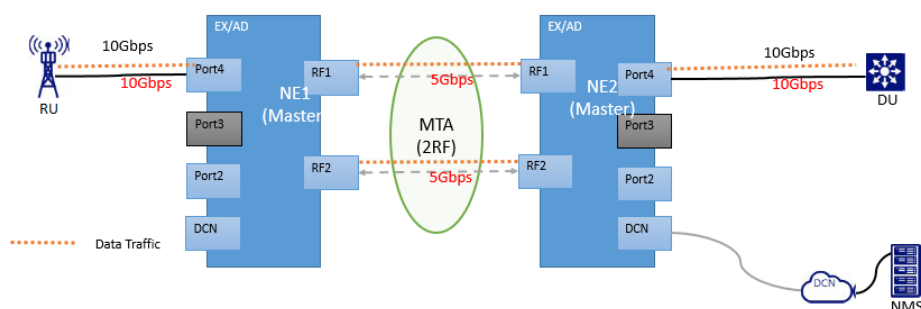
Once the topology configuration is complete, check for below possible alarms.

1. ETH LOS
2. Multi Traffic Aggregation Link
3. Multi Traffic Aggregation Setting Mismatch

To Clear the Alarms, refer to **5.5 Trouble Clearing in Operation and Maintenance** for details.

3.5.5 Use Case Verification

Figure 3-67 Data Traffic Flow



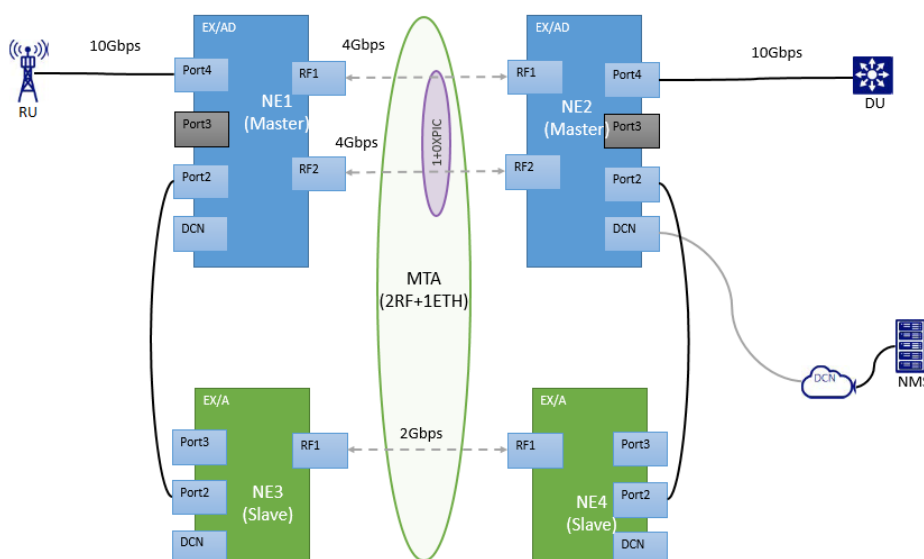
1. Verify the counters in ETH RMON Report on sending end Master [NE1] for traffic taken through Wireless link [Multi GRP]. Refer to **3.3.3 ETH RMON Report in Operation and Maintenance**.
2. Verify the counters in ETH RMON Report on receiving end Master [NE4] Port04 for the entire traffic received through Wireless link [Multi GRP] and transmitted to DU. Refer to **3.3.3 ETH RMON Report in Operation and Maintenance**.

3.6 Use case 6 - MTA Slave Node Reset during FW upgrade

3.6.1 Scenario briefing

This section explains a typical user scenario of MTA topology with 2 MODEM (with XPIC) and 1 ETH port and the traffic flow when the Slave node is reset with TX mute enabled on the Slave MODEM. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

3.6.2 Topology



3.6.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.6.3.1 Steps Summary - NE1 and NE2

1. Follow steps 1 to 8 in [3.1.3.1 Steps Summary - NE1 and NE2](#).

3.6.3.2 Steps Summary - NE3 and NE4

1. Follow steps 1 to 7 in [3.1.3.2 Steps Summary - NE3 and NE4](#).

3.6.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-10

1. Follow steps 1 to 8 in [3.1.3.3 Detailed Configuration steps – NE1 and NE2](#).

3.6.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-11

1. Follow steps 1 to 7 in [3.1.3.4 Detailed Configuration steps – NE3 and NE4](#).

3.6.4 Alarm and Troubleshooting:

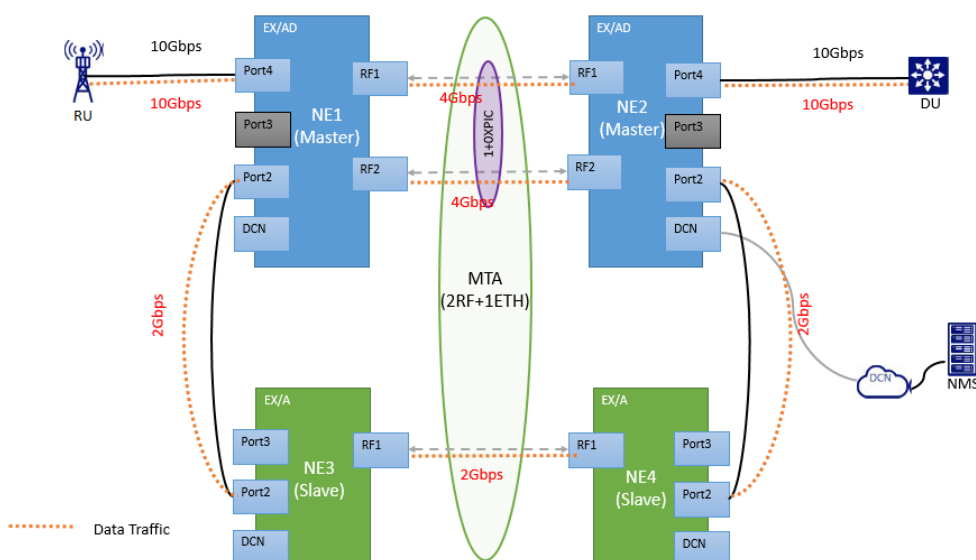
Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch

To Clear the Alarms, refer to [5.5 Trouble Clearing in Operation and Maintenance](#) for details.

3.6.5 Use Case Verification

Figure 3-68 Data Traffic Flow

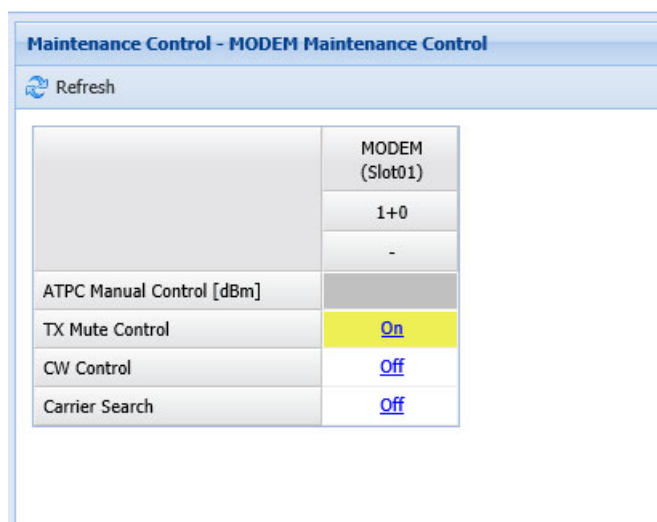


1. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
2. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
3. Enable TX Mute on NE3 MODEM RF1. Refer **4.5.2 TX Mute Control in Operation and Maintenance** for details.

Figure 3-69 MODEM Maintenance Control Window

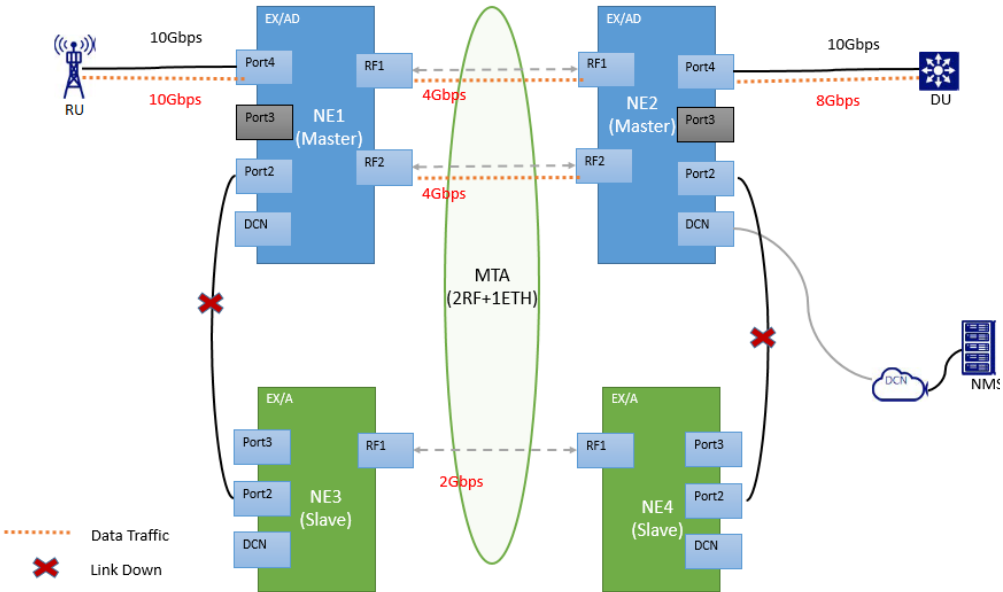


Figure 3-70 MODEM Maintenance Control Window



4. Perform FW Upgrade on the Slave Node NE3. Refer to **4.9.2.1 Update Program File - BB Firmware in Operation and Maintenance** for details.
5. Verify the counters in ETH RMON Report on receiving end Masters [NE2] that traffic is received only from the MTA Direct Link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.

Figure 3-71 Data Traffic Flow when Slave Node NE3 is Reset



6. Verify the ETH-BN (RX) in MEP is “0” during NE3 is down for FW upgrade.

Figure 3-72 ETH OAM Setting Window (1/2: on the leftmost)

Provisioning - ETH Function Setting - ETH OAM Setting

Refresh

OAM MEP OAM MIP OAM MEG Link OAM

+ Add MEP - Delete MEP

VLAN Service Name	Item	Slot	Port	Peer MEP ID	BNM Server MEP	ETH-BN Period
MTA_Through_VLAN	LAG		Multi GRP1	2		

Figure 3-73 ETH OAM Setting Window (2/2: on the rightmost)

ETH-BN (TX)					ETH-BN (RX)	
ETH-BN Period	BNM Priority	ETH-BN Nominal Bandwidth	ETH-BN Current Bandwidth	BNM Hold Time	ETH-BN Period Setting Value	ETH-BN Current Bandwidth
					10 [s]	0 [Mbps]

7. Verify the QoS Shaper Rate of the MTA GRP is updated with Wireless link ETH Bandwidth only as NE3 is down for FW upgrade.

Figure 3-74 QoS / Classification Setting Window

Provisioning - ETH Function Setting - QoS / Classification Setting

Refresh

Classify Setting

Policer Setting

Shaper Setting

Edit Profile

QoS Shaper Setting List

Number of Queue

8 Classes QoS

VLAN Shaper

Disable

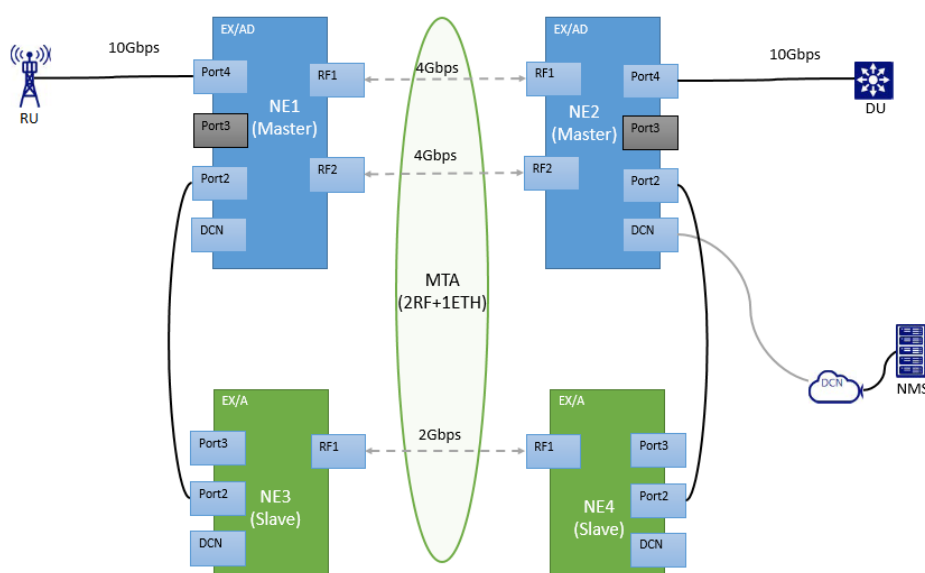
Item	Slot	Port Shaper			Priority Shaper								
		Port	Shaper Rate[bps]	Profile	Drop Mode	Priority0	Priority1	Priority2	Priority3	Priority4	Priority5	Priority6	Priority7
Main		Port03	1000M	1Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP
		Port04	10000M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP
LAG		Multi GRP1	8054.042M	10Gbps Default	WTD	SP	SP	SP	SP	SP	SP	SP	SP

3.7 Use case 7 - MTA with LLF

3.7.1 Scenario briefing

This section explains a typical user scenario of MTA topology with 2 MODEM and 1 ETH port and the traffic flow when LLF configured on MTA GRP. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 10 Gbps flows between the RU and DU through the MTA link.

3.7.2 Topology



3.7.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.7.3.1 Steps Summary - NE1 and NE2

1. Follow steps 1 to 7 in [3.1.3.1 Steps Summary - NE1 and NE2](#).
2. Create LLF Group with Trunk port as MODEM RF1 and Edge port as Port4.
3. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN, Through VLAN and choose MEP Index created in Step 7 from drop-down menu.

3.7.3.2 Steps Summary - NE3 and NE4

1. Follow steps 1 to 7 in [3.1.3.2 Steps Summary - NE3 and NE4](#).

3.7.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-12

1. Follow steps 1 to 7 in [3.1.3.3 Detailed Configuration steps – NE1 and NE2](#).
2. Create LLF Group with Trunk port as MODEM RF1 and Edge port as Port4. Refer [9.15.1 Add LLF Group in Set Network and System Provisioning](#) for details.

Figure 3-75 LLF Setting Window

Provisioning - ETH Function Setting - LLF Setting								
Refresh Add LLF Delete LLF								
LLF GRP ID	LLF Port Type	Item	Slot	Port	Port Name	Send LLF Signal	Ignore Received LLF Signal	
1	Trunk	MODEM	Slot01	Port01		Enable	Disable	
1	Edge	Main		Port04	Port04 - Data Link			

3. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN, Through VLAN and choose MEP Index created in Step 7 from drop-down menu. Refer [8.2.3 Add Multi LAG in Set Network and System Provisioning](#) for details.

Figure 3-76 Link Aggregation Setting Window

Provisioning - Link Aggregation Setting

Refresh

Add ETH LAG

Add Multi LAG

Delete LAG

Link Aggregation Group

LAG	LAG Name	LAG Link Status	Mode	TX Interval	Revertive Mode	Distribution Rule
Multi GRP1	MTA-GRP	Link Up	Static			L1 Base

Link Aggregation Port

Item	Slot	Port	Port Name	Media Type	Speed	Duplex	VLAN ID	LAG	LAG Port Status	Port Role	Aggregation VLAN	Through VLAN
Main		Port02	Port02- Relay Link	Optical	10 [Gbps]	Full	100,200	Multi GRP1	Active		300	200
Main		Port03					1					
Main		Port04	Port04 - Data Link	Optical	10 [Gbps]	Full	100					
MODEM	Slot01	Port01					100,200	Multi GRP1	Active			
MODEM	Slot02	Port01					100,200	Multi GRP1	Active			

Condition 3-7

- At the time of creating MTA setting, Multi group logical interface will take over the configuration of VLAN, ETH-OAM, QOS, Static FDB, RSTP/MSTP, LLF and PTP-BC of the least MODEM port associated in the MTA group as shown below.

The LLF created with MODEM RF1 in **Figure 3-85 Equipment Mode Setting Window** is taken over by MTA GRP in below figure.

Provisioning - ETH Function Setting - LLF Setting								
Refresh Add LLF Delete LLF								
LLF GRP ID	LLF Port Type	Item	Slot	Port	Port Name / LAG Name	Send LLF Signal	Ignore Received LLF Signal	
1	Trunk	LAG		Multi GRP1	MTA-GRP	Enable	Disable	
1	Edge	Main		Port04	Port04 - Data Link			

NOTE: MTA operates with other features like ETH-OAM, QOS, FDB, RSTP/MSTP, PTP-BC in the same way.

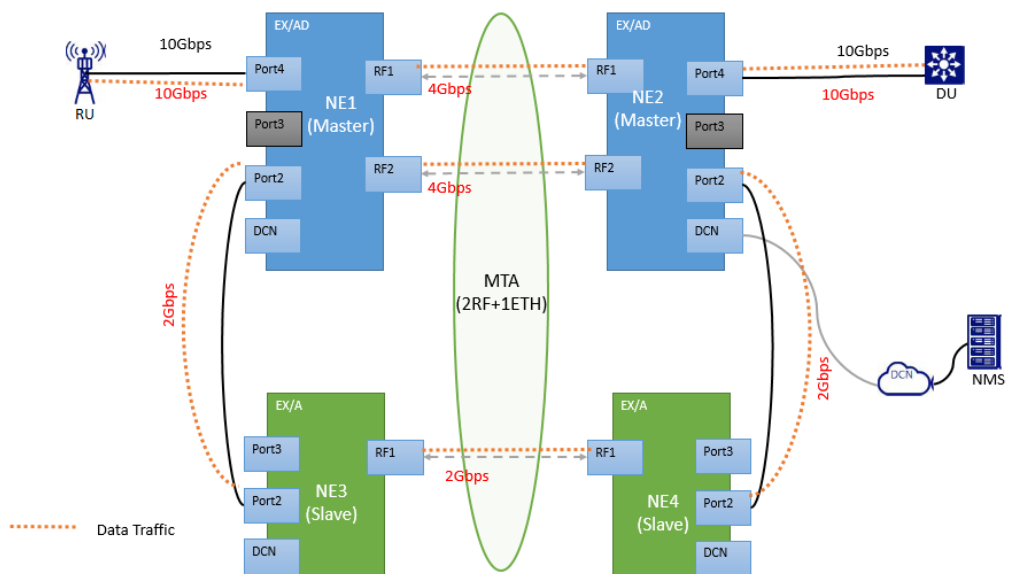
3.7.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-13

- Follow steps 1 to 7 in **3.1.3.4 Detailed Configuration steps – NE3 and NE4**.

3.7.4 Use Case Verification

Figure 3-77 Data Traffic Flow



- Verify the counters in ETH RMON Report on Slave [NE2 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.

2. Verify the counters in ETH RMON Report on receiving end Master [NE2] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
3. Enable TX Mute on MODEM RF1 and MODEM RF2 on NE1. Refer **4.5.2 TX Mute Control in Operation and Maintenance** for details.

Figure 3-78 MODEM Maintenance Control Window

MODEM Maintenance Control (MODEM (Slot01) - 1+0)

TX Mute Control: ☒ On ☐ Off

Release Time:

OK Cancel

Figure 3-79 MODEM Maintenance Control Window

Maintenance Control - MODEM Maintenance Control

Refresh

	MODEM (Slot01)	MODEM (Slot02)
	1+0	1+0
	-	-
ATPC Manual Control [dBm]		
TX Mute Control	On	On
CW Control	Off	Off
Carrier Search	Off	Off
XPIC Reset		

4. Verify the edge port Port4 [LLF GRP] link is still up as the MTA Member port Port2 is still up and traffic flows end to end through the Relay Link [through Slave Nodes].

Figure 3-80 ETH Port Setting Window

Provisioning - ETH Function Setting - ETH Port Setting

Refresh

Item	Slot	Port	Port Usage	Port Name	SFP	Status			
						Link	Speed	Duplex	10GbE Usage
Main		Port02	Enable	Port02 - Relay link	10G BASE-SR	Link Up	10 [Gbps]	Full	Enable
		Port03	Disable						
		Port04	Enable	Port04 - Data Link	10G BASE-SR	Link Up	10 [Gbps]	Full	Enable

5. Disable port Port2 on Slave node NE3.

Figure 3-81 ETH Port Setting Window

Provisioning - ETH Function Setting - ETH Port Setting										
Refresh										
Item	Slot	Port	Port Usage	Port Name	SFP	Status				
						Link	Speed	Duplex	10GbE Usage	
Main		Port02	Disable	Port02 - Relay Link						
		Port03	Disable							

6. Verify Edge port Port4 is down on both Master Nodes [NE1 and NE2] and there is no traffic flow end to end as all the MTA members are down now.

Figure 3-82 ETH Port Setting Window [In NE1]

Provisioning - ETH Function Setting - ETH Port Setting										
Refresh										
Item	Slot	Port	Port Usage	Port Name	SFP	Status				
						Link	Speed	Duplex	10GbE Usage	
Main		Port02	Enable	Port02 - Relay link	10G BASE-SR	Link Down				Enable
		Port03	Disable							
		Port04	Enable	Port04 - Data Link	10G BASE-SR	Link Down				Enable

Figure 3-83 ETH Port Setting Window [In NE2]

Provisioning - ETH Function Setting - ETH Port Setting										
Refresh										
Item	Slot	Port	Port Usage	Port Name	SFP	Status				
						Link	Speed	Duplex	10GbE Usage	
Main		Port02	Enable	Port02- Relay Link	10G BASE-SR	Link Up	10 [Gbps]	Full		Enable
		Port03	Disable							
		Port04	Enable	Port04 - Data Link	10G BASE-SR	Link Down				Enable

Figure 3-84 Alarm on NE1 and NE2 due to MTA link down

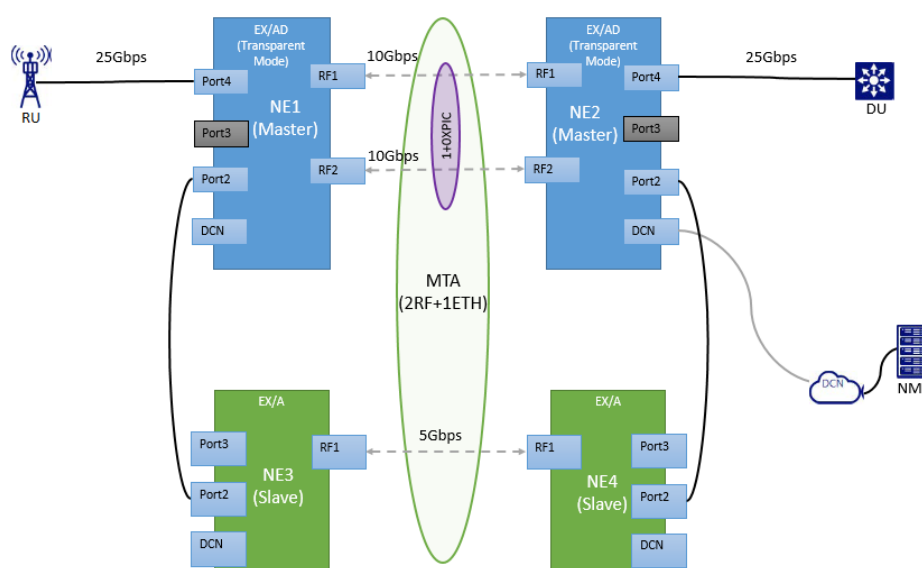
Current Status										
Refresh <input type="checkbox"/> Auto Mode <input type="checkbox"/> Hide NR										
Active Alarm <input type="checkbox"/> Event Log <input type="checkbox"/> Equipment <input type="checkbox"/> ETH										
Save										
Date	Module	Block	Group / Slot	Port / Index	Type	Severity	Interface Name	Items	Status	
10/02/29 22:37:15	BB	MODEM	Slot01			VR		RDI	Alarm	
10/02/29 22:37:37	BB	MODEM	Slot02			VR		RDI	Alarm	
10/02/29 22:37:38	BB	Main		Port4		MJ	Port04 - Data Link	ETH RF	Alarm	
10/02/29 22:37:38	BB		LAG	Multi GRP1		MJ		Multi Traffic Aggregation Link	Alarm	

3.8 Use case 8 - MTA [2 MODEM (XPIC) and 1 ETH port] in Transparent Mode

3.8.1 Scenario briefing

This section explains a typical user scenario to bring up a MTA topology with Equipment in Transparent Mode. Below topology represent Multi Traffic Aggregation of two Wireless and one Wired link. Data Traffic of 25 Gbps flows between the RU and DU through the MTA link.

3.8.2 Topology



3.8.3 Step by Step Configuration

This section contains the step by step procedure to bring up the above topology.

3.8.3.1 Steps Summary - NE1 and NE2

1. Configure Equipment Forwarding Mode as Transparent Mode.
2. Register MODEM RF1, RF2 and enable XPIC configuration.
3. Configure Radio (XPIC) to set CS/Reference Modulation for the MODEM RF1, RF2.
4. Configure ETH port Port2 as 10G port and Port4 as 25G port.

5. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN (VLAN X).
6. Create Through VLAN (VLAN Y) in 'VLAN List'.
7. Associate Through VLAN to MTA GRP in 'VLAN Setting'.
8. Create MEG with ETH-CCM enable, ETH-BN Rx-enable.
9. Create MEP on MTA GRP using Through VLAN.
10. Associate MEP Index created in Step 9 and Through VLAN created in step 6 in Link Aggregation Setting.

3.8.3.2 Steps Summary - NE3 and NE4

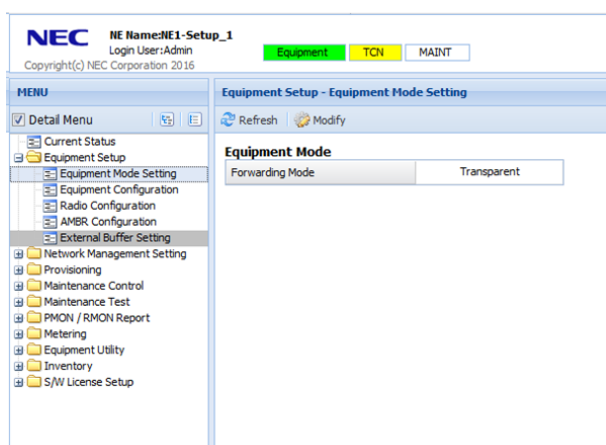
1. Register MODEM RF1.
2. Configure Radio to set CS/Reference Modulation for the MODEM RF1.
3. Configure ETH port Port2 as 10G port.
4. Create VLAN IDs same as Through VLAN (VLAN Y) and Aggregation VLAN (VLAN X) in Master (NE1 and NE2).
5. Associate VLAN X and VLAN Y to ETH Port2 and VLAN X to MODEM Port RF1".
6. Create MEG with ETH-CCM enable, ETH-BN Tx-enable, BNM Server MEP as MODEM RF1.
7. Create MEP on ETH Port2 using Through VLAN.

3.8.3.3 Detailed Configuration steps - NE1 and NE2

Procedure 3-14

1. Configure Equipment Forwarding Mode as Transparent Mode. Refer **4.2.2 Set Equipment Mode in Set Network and System Provisioning** for details.

Figure 3-85 Equipment Mode Setting Window



2. Register MODEM RF1, RF2 and enable XPIC configuration. Refer **4.3 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-86 Equipment Configuration Window

NEC

NE Name:No.001

Login User:Admin

Copyright(c) NEC Corporation 2016

Equipment

TCN

MAINT

MENU

Detail Menu

Current Status

Equipment Setup

Equipment Mode Setting

Equipment Configuration

Radio Configuration

AMBR Configuration

External Buffer Setting

Network Management Setting

Provisioning

Maintenance Control

Maintenance Test

PMON / RMON Report

Metering

Equipment Utility

Inventory

S/W License Setup

Equipment Setup - Equipment Configuration

Refresh Setup

NE Name

No.001

Equipment Configuration

MODEM

MODEM

MODEM / XPIC Configuration

Slot No.	1	2
XPIC GRP	XPIC GRP 1	

3. Configure Radio (XPIC) to set CS/Reference Modulation for the MODEM RF1, RF2. Refer **4.4 Radio Configuration in Set Network and System Provisioning** for details.

Figure 3-87 Radio Configuration Window

NEC

NE Name:No.001

Login User:Admin

Copyright(c) NEC Corporation 2016

Equipment

TCN

MAINT

Opposite Site Links

Maintenance

MENU

Detail Menu

Current Status

Equipment Setup

Equipment Mode Setting

Equipment Configuration

Radio Configuration

AMBR Configuration

External Buffer Setting

Network Management Setting

Provisioning

Maintenance Control

Maintenance Test

PMON / RMON Report

Metering

Equipment Utility

Inventory

S/W License Setup

Equipment Setup - Radio Configuration

Refresh Setup

Current Status

	XPIC GRP 1 (NO.001) (Slot1/02)	
	1+0 XPIC	
	No. 1	No. 2
Channel Spacing	750kHz	
Reference Modulation	22QAM	
ETH Bandwidth [Mbps]	2910	2910
TX Frequency [MHz]	71125.000	
RX Frequency [MHz]	81125.000	
Frame ID	1	18
TX Power Control	MTPC	
TX Power Up Key	Not Used	
TX Start Frequency [MHz]	71125.000	
TX Stop Frequency [MHz]	75875.000	
Frequency Step [MHz]	1.250	
Shift Frequency [MHz]	10000.000	
Upper / Lower	Lower	
Sub Band	C	
RF Frequency Type	TX & RX	
Polarization	Vertical	Horizontal

4. Configure ETH port Port2 as 10G port and Port4 as 25G port. Refer **9.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-88 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage:

☒ Enable

☐ Disable

Port Name:

10GbE Usage:

☒ Enable

☐ Disable

Media Type:

☐ Electrical

☒ Optical

Speed:

10 [Gbps]

Duplex:

☒ Full

MDI / MDI-X:

☒ MDI

☐ MDI-X

Flow Control:

☐ Enable

☒ Disable

Sync ETH:

☒ Enable

☐ Disable

LLDP Usage:

☐ Enable

☒ Disable

LLDP Mode:

☒ Standard

☐ Proprietary MAC

LLDP Port ID Subtype:

☒ MAC Address

☐ Interface Name

ALS Usage:

☐ Enable

☒ Disable

ALS Interval:

60 [s]

OK

Cancel

Figure 3-89 ETH Port Setting (Main - Port04) Window

ETH Port Setting (Main - Port04)

Port Usage:

☒ Enable

☐ Disable

Port Name:

STC-4/13

10GbE Usage:

☐ Enable

☐ Disable

25GbE Usage:

☒ Enable

☐ Disable

Media Type:

☐ Electrical

☒ Optical

Speed:

25 [Gbps]

Duplex:

☒ Full

MDI / MDI-X:

☒ MDI

☐ MDI-X

Flow Control:

☐ Enable

☒ Disable

Sync ETH:

☒ Enable

☐ Disable

LLDP Usage:

☐ Enable

☒ Disable

LLDP Mode:

☒ Standard

☐ Proprietary MAC

LLDP Port ID Subtype:

☒ MAC Address

☐ Interface Name

ALS Usage:

☐ Enable

☒ Disable

ALS Interval:

60 [s]

OK

Cancel

Figure 3-90 ETH Port Setting Window (1/3: on the leftmost)

Provisioning - ETH Function Setting - ETH Port Setting

Refresh

Item	Slot	Port	Port Usage	Port Name	SFP	Status		
						Link	Speed	Duplex
Main		Port02	Enable		10G BASE-SR	Link Up	10 [Gbps]	Full
		Port04	Enable	STC-4/13	10G BASE-SR	Link Up	25 [Gbps]	Full

Figure 3-91 ETH Port Setting Window (2/3: on the middle)

Provisioning - ETH Function Setting - ETH Port Setting											
Refresh											
Setting											
Duplex	10GbE Usage	25GbE Usage	Media Type	Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype
Full	Enable		Optical	10 [Gbps]	Full		Disable	Enable	Disable		
Full	Enable	Enable	Optical	25 [Gbps]	Full		Disable	Enable	Disable		

Figure 3-92 ETH Port Setting Window (3/3: on the rightmost)

Provisioning - ETH Function Setting - ETH Port Setting											
Refresh											
Setting											
Media Type	Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype	ALS Usage	ALS Interval	
Optical	10 [Gbps]	Full		Disable	Enable	Disable			Disable		
Optical	25 [Gbps]	Full		Disable	Enable	Disable			Disable		

5. Create MTA GRP with MODEM Ports RF1, RF2 and ETH Port2, assign Aggregation VLAN (VLAN X). Refer **8.2.3 Add Multi LAG in Set Network and System Provisioning** for details.

Figure 3-93 Multi LAG Setting Window

Multi LAG Setting

Link Aggregation Group

LAG: Multi GRP1

LAG Name:

VLAN ID:

Link Aggregation Port

	Item	Slot	Port	LAG	Aggregation VLAN	Through VLAN	ETH-BN MEP
<input checked="" type="checkbox"/>	MODEM	Slot01	Port01	Multi GRP1			
<input checked="" type="checkbox"/>	MODEM	Slot02	Port01	Multi GRP1			
<input checked="" type="checkbox"/>	Main		Port02	Multi GRP1	300		

OK Cancel

Figure 3-94 Link Aggregation Setting Window

Link Aggregation Group

LAG	LAG Name	LAG Link Status	Mode	Tx Interval	Revertive Mo...	Distribution Rule	Shaper Rate[Mbps]
Multi GRP1		Link Up	Static			L1 Base	5820.416

Link Aggregation Port

Item	Slot	Port	Port Name	Media Type	Speed	Duplex	VLAN ID	LAG	LAG Port Sta...	Port Role	Aggregation VLAN	Through VLAN
Main		Port02	STC-4/13	Optical	10 [Gbps]	Full	100	Multi GRP1	Active		300	100
Main		Port04	STC-4/13	Optical	10 [Gbps]	Full	1					
MODEM	Slot01	Port01					100	Multi GRP1	Active			
MODEM	Slot02	Port01					100	Multi GRP1	Active			

6. Create Through VLAN (VLAN Y) in 'VLAN List'. Refer **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-95 VLAN Setting Window

VLAN List

VLAN ID	VLAN Service Name
1	(Undefined)
100	(Undefined)
200	(Undefined)
300	MTA VLAN-300

7. Associate Through VLAN to MTA GRP in 'VLAN Setting'. Refer **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-96 VLAN Setting Window

VLAN List

Item	Slot	Port	Port Name / LAG Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port04	STC-4/13	1	Access	(Undefined)	
LAG			Multi GRP1	100	Trunk	(Undefined)	
				100	Access	(Undefined)	
				100	Trunk	(Undefined)	

8. Create MEG with ETH-CCM enable, ETH-BN Rx-enable. Refer **9.6.1.1 Add MEG Index in Set Network and System Provisioning** for details.

Figure 3-97 OAM MEG Setting (Modify) Window

OAM MEG Setting (Modify)

MEG Index: 1

Maintenance Domain Name: NEC

Short MA Name: NEC

MEG Level: 5

CCM: ☒ Enable ☐ Disable

ETH-CC Period: 1 [s]

CCM Priority: 0

ETH-BN (TX)

BNM (TX): ☐ Enable ☒ Disable

BNM Server MEP: Multi GRP1

ETH-BN (TX) Period: 1 [s]

BNM Priority: 7

BNM Hold Time: 1 [s]

ETH-BN (RX)

BNM (RX): ☒ Enable ☐ Disable

ETH-BN (RX) Period: 1 [s]

OK Cancel

9. Create MEP on MTA GRP using Through VLAN. Refer **9.6.2.1 Add MEP Index in Set Network and System Provisioning** for details.

Figure 3-98 OAM MEP Setting (Modify) Window

OAM MEP Setting (Modify)

MEP Configuration

MEP Index: 1

MEP ID: 11 (1 - 8191)

Item: LAG

Port: Multi GRP1

ETH OAM Source MAC Address: D4:92:34:31:0E:E4

Direction: ☐ Up MEP ☒ Down MEP

Enable	VLAN ID	VLAN Service Name
<input checked="" type="checkbox"/>	100	

MEG Configuration

Enable	MEG Index	Maintenance Domain Name	Short MA Name
<input checked="" type="checkbox"/>	1	NEC	NEC

Peer MEP Configuration

Add Peer MEP

Enable	Peer MEP ID
<input checked="" type="checkbox"/>	33

OK Cancel

Figure 3-99 ETH OAM Setting Window

Provisioning - ETH Function Setting - ETH OAM Setting

Refresh

OAM MEP OAM MEG

Add MEP Delete MEP

Index	MEP ID	MEG Index	Maintenance Domain Na...	Short MA Name	MEG Level	COH	Direction	VLAN ID	VLAN Service Name	Item	Slot	Port	Peer MEP ID	BNM Serv MEP
1	11	1	NEC	NEC	5	Enable	Down MEP	100		LAG		Multi GRP1	33	

10. Associate MEP Index created in Step 9 and Through VLAN created in step 6 in Link Aggregation Setting. Refer **8.2.4 Modify Multi LAG in Set Network and System Provisioning** for details.

Figure 3-100 Multi LAG Setting Window

Multi LAG Setting

Link Aggregation Group

LAG: Multi GRP1

LAG Name:

VLAN ID: 100

Link Aggregation Port

	Item	Slot	Port	LAG	Aggregation VLAN	Through VLAN	ETH-BN MEP
<input checked="" type="checkbox"/>	MODEM	Slot01	Port01	Multi GRP1			
<input checked="" type="checkbox"/>	MODEM	Slot02	Port01	Multi GRP1			
<input checked="" type="checkbox"/>	Main		Port02	Multi GRP1	300	100	1

OK Cancel

3.8.3.4 Detailed Configuration steps - NE3 and NE4

Procedure 3-15

1. Register MODEM RF1. Refer **4.2 Equipment Configuration in Set Network and System Provisioning** for details.

Figure 3-101 Equipment Configuration Window

NOTE: Slave node used is EX/A, hence MODEM registration is not required.

2. Configure Radio to set CS/Reference Modulation for the MODEM RF1. Refer **4.3 Equipment Configuration and 4.4 AMBR Configuration in Set Network and System Provisioning** for details.

Figure 3-102 Radio Configuration Window

Current Status	
	MODEM (Slot01)
	1+0
	-
Channel Spacing	1000MHz
Reference Modulation	64QAM
ETH Bandwidth [Mbps]	4710
TX Frequency [MHz]	73375.000
RX Frequency [MHz]	83375.000
Frame ID	1
TX Power Control	MTPC
TX Power Up Key	Not Used
TX Start Frequency [MHz]	73375.000
TX Stop Frequency [MHz]	75875.000
Frequency Step [MHz]	1.250
Shift Frequency [MHz]	10000.000
Upper / Lower	Lower
Sub Band	B
RF Frequency Type	TX & RX

3. Configure ETH port Port2 as 10G port. Refer **9.3 ETH Port Setting in Set Network and System Provisioning** for details.

Figure 3-103 ETH Port Setting (Main - Port02) Window

ETH Port Setting (Main - Port02)

Port Usage:

☒ Enable ☐ Disable

Port Name:

10GbE Usage:

☒ Enable ☐ Disable

Media Type:

☐ Electrical ☒ Optical

Speed:

10 [Gbps]

Duplex:

☒ Full

MDI / MDI-X:

☒ MDI ☐ MDI-X

Flow Control:

☐ Enable ☒ Disable

Sync ETH:

☒ Enable ☐ Disable

LLDP Usage:

☐ Enable ☒ Disable

LLDP Mode:

☒ Standard ☐ Proprietary MAC

LLDP Port ID Subtype:

☒ MAC Address ☐ Interface Name

ALS Usage:

☐ Enable ☒ Disable

ALS Interval:

60 [s]

OK

Cancel

Figure 3-104 ETH Port Setting Window (1/2: on the leftmost)

NEC Nameless001
Login User:Admin
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Equipment TON MAINT

Configure Site Link Maintenance Logout Auto-Logout

Menu

Detail Menu

Current Status
Equipment Setup
Network Management Setting
Provisioning
MCOOP Function Setting
Link Aggregation Setting
ETH Function Setting
Equipment Setting
VLAN Setting
VRRP Setting
ETH OAM Setting
RSTP / MSTP Setting
QoS Setting
QoS / Classification Setting
Service Switch Setting
Filter Setting
LACP Transparent Setting
Mirroring Setting
Port Isolate Setting
LIF Setting
Broadcast Storm Control Set
Equipment Clock / Synchronization

Provisioning - ETH Function Setting - ETH Port Setting

Refresh

Item	Slot	Port	Port Usage	Port Name	SFP	Link	Status	Speed	Duplex	10GbE Usage
Main		Port02	Enable		10G BASE-SR	Link Up	Link Up	10 [Gbps]	Full	Enable
		Port02	Disable							

Figure 3-105 ETH Port Setting Window (2/2: on the rightmost)

Provisioning - ETH Function Setting - ETH Port Setting

Refresh

Setting													
ex	10GbE Usage	Media Type	Speed	Duplex	MDI / MDI-X	Flow Control	Sync ETH	LLDP Usage	LLDP Mode	LLDP Port ID Subtype	ALS Usage	ALS Interval	
	Enable	Optical	10 [Gbps]	Full		Disable	Enable	Disable			Disable		

4. Create VLAN IDs same as Through VLAN (VLAN Y) and Aggregation VLAN (VLAN X) in Master (NE1 and NE2). Refer **9.4.1 Add VLAN/S-VLAN ID in Set Network and System Provisioning** for details.

Figure 3-106 VLAN Setting Window

NEC NE Name:No.001
Login User:Admin
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Equipment TCN MAINT

Opposite Site Links Maintenance

MENU

- Detail Menu
- Current Status
- Equipment Setup
- Network Management Setting
- Provisioning
 - MODEM Function Setting
 - Link Aggregation Setting
 - ETH Function Setting
 - Equipment Setting
 - ETH Port Setting
 - VLAN Setting**
 - FOB Setting
 - ETH OAM Setting
 - RSTP / MSTP Setting
 - BRP Setting
 - QoS / Classification Setting
 - Service Switch Setting
 - Filter Setting
 - LACP Transparent Setting
 - Mirroring Setting
 - Port Isolate Setting
 - LLF Setting
 - Broadcast Storm Control Setting
 - Equipment Clock / Synchronization
 - Alarm Setting
 - PHON / RMON Setting
 - Maintenance Control
 - Maintenance Test

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting VLAN List

Add VLAN ID Delete VLAN ID

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Number of items per page: (1 - 256) Search

VLAN ID	VLAN Service Name
1	(Undefined)
100	(Undefined)
200	(Undefined)
300	(Undefined)

- Associate VLAN X and VLAN Y to ETH Port2 and VLAN X to MODEM Port RF1. Refer **9.4.4 VLAN Setting (802.1Q Mode) in Set Network and System Provisioning** for details.

Figure 3-107 VLAN Setting Window

NEC NE Name:No.001
Login User:Admin
Copyright(c) NEC Corporation 2016

Equipment TCN MAINT

Opposite Site Links Maintenance Logout Auto-Logout

MENU

- Detail Menu
- Current Status
- Equipment Setup
- Network Management Setting
- Provisioning
 - MODEM Function Setting
 - Link Aggregation Setting
 - ETH Function Setting
 - Equipment Setting
 - ETH Port Setting
 - VLAN Setting**
 - FOB Setting
 - ETH OAM Setting
 - RSTP / MSTP Setting
 - BRP Setting
 - QoS / Classification Setting
 - Service Switch Setting
 - Filter Setting
 - LACP Transparent Setting
 - Mirroring Setting
 - Port Isolate Setting
 - LLF Setting
 - Broadcast Storm Control Setting
 - Equipment Clock / Synchronization
 - Alarm Setting
 - PHON / RMON Setting
 - Maintenance Control
 - Maintenance Test

Provisioning - ETH Function Setting - VLAN Setting

Refresh

VLAN Setting VLAN List

VLAN Mode: 802.1Q

Filter

VLAN ID: (1 - 4094)

Item: Port: Number of items per page: (1 - 256) Search

Item	Slot	Port	Port Name	VLAN ID	VLAN Port Type	VLAN Service Name	External Used VLAN
Main		Port02		100	Trunk	(Undefined)	
Main		Port02		300	Trunk	(Undefined)	
Main		Port03		1	Access	(Undefined)	
MODEM	Slot01	Port01		100	Trunk	(Undefined)	
MODEM	Slot01	Port01		300	Trunk	(Undefined)	

- Create MEG with ETH-CCM enable, ETH-BN Tx-enable, BNM Server MEP as MODEM RF1. Refer **9.6.1.1 Add MEG Index in Set Network and System Provisioning** for details.

Figure 3-108 OAM MEG Setting (Modify) Window

OAM MEG Setting (Modify)

MEG Index:1

Maintenance Domain Name:NEC

Short MA Name:NEC

MEG Level:7

CCM:☒ Enable ☐ Disable

ETH-CC Period:1 [s]

CCM Priority:0

ETH-BN (TX)

BNM (TX):☒ Enable ☐ Disable

BNM Server MEP:MODEM (Slot01)

ETH-BN (TX) Period:1 [s]

BNM Priority:7

BNM Hold Time:1 [s]

ETH-BN (RX)

BNM (RX):☐ Enable ☒ Disable

ETH-BN (RX) Period:1 [s]

OK

Cancel

Figure 3-109 VLAN Setting Window

NEC NE Name:R001

High User Admin

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Provisioning - ETH Function Setting - ETH OAM Setting

Current Status

Equipment Setting

Network Management Setting

Provisioning

MODEM Function Setting

Link Aggregation Setting

ETH Function Setting

Equipment Setting

ETH Port Setting

VLAN Setting

Port Setting

ETH OAM Setting

RSVP / RSVP Setting

RSVP Setting

QoS / Classification Setting

Service Switch Setting

Filter Setting

L2TP Transparent Setting

Monitoring Setting

Port Status Setting

L2P Setting

Breakout Storm Control Set

Equipment Check / Function

ADD MEG

DELETE MEG

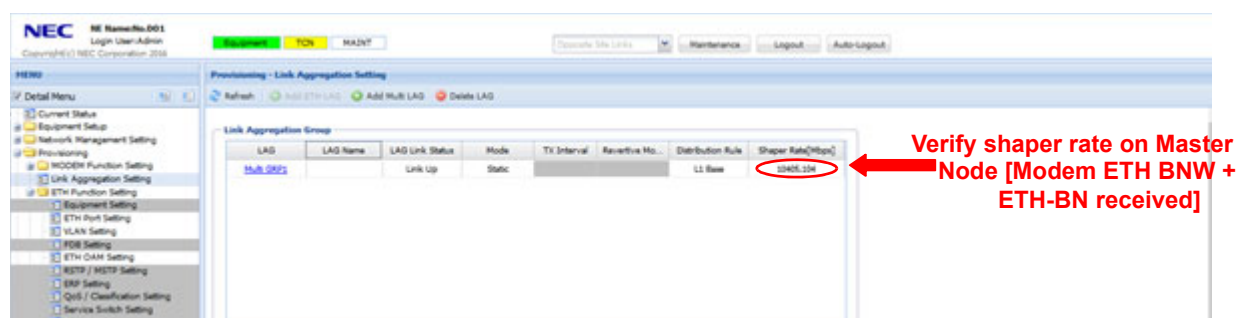
Short MA Name	MEG Level	CCM	ETH-CC Period	CCM Priority	BNM	BNM Server MEP	ETH-BN (TX) Period	BNM Priority	BNM Hold Time	ETH-BN (RX) Period
NEC	7	Enable	1 [s]	0	Enable	MODEM (Slot01)	1 [s]	7	1 [s]	Disable

7. Create MEP on ETH Port2 using Through VLAN. Refer **9.6.2.1 Add MEP Index in Set Network and System Provisioning** for details.

GG5-000559-02E

iPASOLINK EX Advanced: MTA ANNEXURE MANUAL

Figure 3-113 Link Aggregation Setting



3.8.4 Alarm and Troubleshooting:

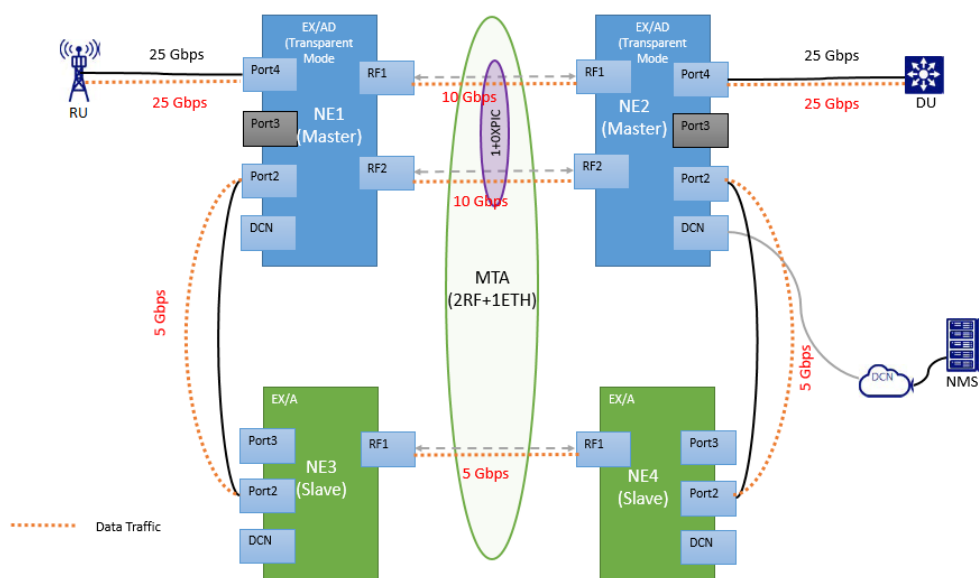
Once the topology configuration is complete, check for below possible alarms.

1. ETH-BN LOC
2. ETH LOS
3. Multi Traffic Aggregation Link
4. Multi Traffic Aggregation Setting Mismatch
5. Forwarding Mode Setting Mismatch

To Clear the Alarms, refer to **5.5 Trouble Clearing in Operation and Maintenance** for details.

3.8.5 Use Case Verification

Figure 3-114 Data Traffic Flow



1. Verify the counters in ETH RMON Report on Slave [NE2 and NE4] Port02 for traffic taken through relay link. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
2. Verify the counters in ETH RMON Report on receiving end Master [NE4] Port04 for the entire traffic aggregated back from MTA ports. Refer **3.3.3 ETH RMON Report in Operation and Maintenance** for details.
3. Perform TX Mute on MODEM RF1 and MODEM RF2 on sender end Master [NE1].

Figure 3-115 MODEM Maintenance Control Window

Maintenance Control - MODEM Maintenance Control		
Refresh		
	XPIC GRP1 (MODEM) (Slot01/02)	
	1+0 XPIC	
	No. 1	No. 2
ATPC Manual Control [dBm]		
TX Mute Control	On	On
CW Control	Off	Off
Carrier Search	Off	Off
XPIC Reset	Auto	

4. Verify the QOS shaper on Master got updated with Slave Modem Bandwidth received via ETH-BNM.

Figure 3-116 Link Aggregation Setting Window

LAG	LAG Name	LAG Link Status	Mode	TX Interval	Revertive Mode	Distribution Rule	Shaper Rate[Mbps]
MULTI GRP1		Link Up	Static			L1 Base	4653.951

Shaper rate on Master updated with Slave Modem Bandwidth

5. Verify the counters in ETH RMON Report on Slave [NE3 and NE4] Port02 and MODEM RF1 for traffic taken through relay link.

3.9 Other Example Topologies

Figure 3-117 MTA Topology with VR4 as Slave

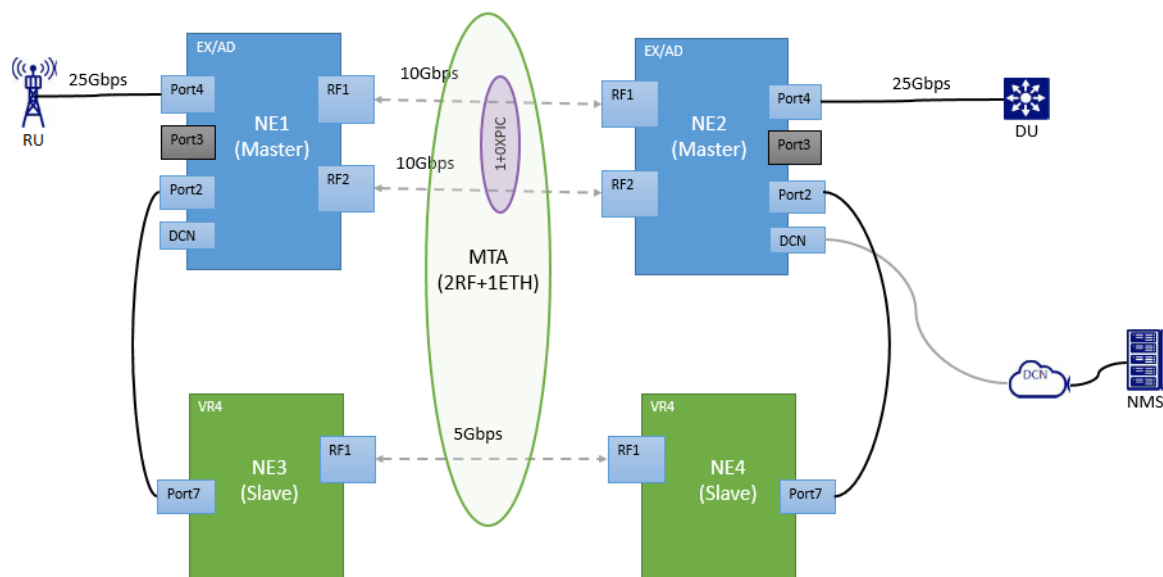


Figure 3-118 MTA Topology with iXA as Slave

