Wholesale Networking

PoC Template #6

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# Introduction

## Purpose

This document demonstrates the proper functionality of a generic Carrier Class Ethernet application based on the RAD ETX product line to provide mobile and business services.

RAD’s ETX-A line of Carrier Ethernet demarcation and aggregation devices, together with the RADView management system enables carriers and service providers to offer managed Carrier Ethernet connectivity solutions to their business and mobile client bases.

We have detailed and grouped our solutions for delivering EAD, EAD with timing capabilities and 10GbE EAD services together with the management and performance monitoring capabilities that are pivotal to meeting exacting business customer service expectations.

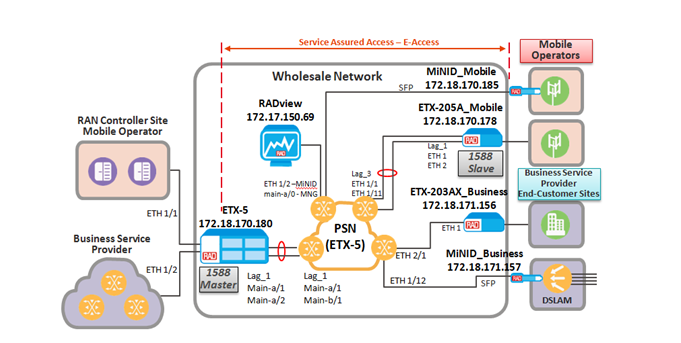
For the EAD standard of Ethernet Service and un-contended port based product, ETX-203A (available in both fixed and modular versions) delivers all the features with advanced OAM, while ETX-220 and ETX-5300A support 10GbE and beyond, with high levels of efficiency and aggregation. The feature-rich, intelligent demarcation devices incorporate RAD’s own Carrier Ethernet ASIC to deliver SLA-based connectivity at the customer premises at a competitive price point.

All devices are fully equipped with a wealth of tools for sophisticated service delivery, traffic management and performance measurement. These significantly reduce service provisioning time, ensure high availability and resilience, and provide end-to-end Quality of Service for SLA assurance.

The ETX product portfolio is a comprehensive offering of products enabling a single vendor access network solution for all Ethernet carrier needs.

## Layout Overview

### Application Diagram



### Devices under Test

|  |  |
| --- | --- |
| ETX-203AX  Low cost, high performance NTE delivering SLA-based Ethernet business services, 2 x 1GbE NNI and 4 x 1 GbE UNI |  |
| ETX-205A  High performance NTE delivering SLA-based Ethernet business services including Synchronous Ethernet, IEEE1588-2008, 2 x 1GbE ports in NNI and 4 x 1GbE port in UNI |  |
| MiNID  Low-cost, high performance NTE delivering SLA-based Ethernet business services, 2 x GbE NNI and 4 x GbE UNI |  |
| ETX-5300A  Aggregates up 80 FE/GE links from remote NTEs with advanced traffic management; highly accurate, hardware-based OAM and performance monitoring; 4 x 10GbE interfaces in the main module; power dissipation up to 500W; form-factor, 3U modular system. |  |

### BOM

The following tables contain the elements used in this PoC testing. It provides the elements name as well as ordering option and SW version running during testing.

#### RAD POC Proposal BOM

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Product** | **Ordering Option** | **Catalog No.** | **Qty** | **SW Version** |
| **ETX-5300** | ETX-5300A/AC | 5700040000 | 1 | 2.4.0(0.19) |
| ETX-5300A-MC/4XFP/AT | 6170210000 | 1 |
| ETX-5300A-ETH/20XGE/UTP | 6660020000 | 1 |
| **ETX-205A** | ETX-205A/AC/PTP | 5271260000 | 1 | 5.8.0(0.44) |
| **ETX-203AX** | ETX-203AX\2SFP\4UTP | 6660020000 | 1 | 5.8.0(0.44) |
| **MiND\_SLV** | MiNID/SLV/GE | 6790050000 |  | 2.1.0(0.40) |
| **SFP** | SFP-6 | 1278050000 | 8 |  |
| XFP-1D | 1279010000 | 2 |  |
| **RADVIEW** | RADVIEW-PC/PMSM/DEMO | 5760260000 | 1 | 4.2.0(0.600) +  ems42-v4.2.3 Patch |
| RV-LIC/ENW |  |  |

#### Test Equipment

|  |  |  |
| --- | --- | --- |
| **Function** | **Unit** | **Notes** |
| **ETH generator** | Spirent |  |
| **Fiber cable** | SM Fiber for SFP-6 and XFP-1D |  |
| **Terminal configuration cable** | RAD CBL-DB9-RJ45 | Supplied |

# Preliminary Configuration and Management

## Devices Preliminary Setting

Creating the services between the different locations will be done via RADview. However, there are several parameters which need to be configured via CLI before beginning to work with RADview.

Before configuring ETX-2 and ETX-5, each device should be set to its default parameters.

### ETX-5 Preliminary Setting

1. Access each of the ETX-5 units and verify that the ETX-5300A-ETH/20XGE/SFP module appears as the actual installed module in slot 1 (**Configuration> show config cards-summary**)
2. ETX-5 HW, Queues, Port and Management Configuration scripts –   
   refer to [Appendix A](#_Hardware,_Queues_and).

**Note:** each of the scripts should be modified according to the IP address of the unit, RADview and Default Gateway.

1. After running the scripts, verify the following:

* The provisioned I/O modules are updated properly (**Configuration> show config cards-summary**).
* The status of the LAG is UP, one of the ports is Active and LACP is Sync (**Configuration>port>lag 1>show status**)
* Ping replies from the Management station to the ETX-5.

1. Save the configuration for each of the ETX-5 devices.

### ETX-2 Preliminary Setting

1. Configure each ETX-2 according to the scripts in Appendix B:

**Note**: Each of the scripts should be modified according to the IP address of the unit, RADview and Default Gateway.

* **ETX-205A** Queues, LAG and Management Configuration scripts –  
  refer to [Appendix B.1](#_Queues_and_Management).
* **ETX-203AX** Queues and Management Configuration scripts –   
  refer to [Appendix B.2](#_Queues_and_Management_1).

1. After running the scripts, verify ping replies from the management station towards each of the ETX-2 units.
2. For the ETX-205A, verify that the status of the LAG is UP, one of the ports is Active and LACP is Sync (**Configuration>port>lag 1>show status**)
3. Save the configuration for each ETX-2.

### MiNID Preliminary Setting

1. Configure the device according to the script in Appendix C:

**Note:** The script should be modified according to the IP address of the unit, RADview and Default Gateway.

1. **MiNID** Management Configuration scripts - refer to [Appendix C](#C).
2. After running the script, verify ping replies from the management station towards the MiNID device.
3. Save the configuration at the MiNID device.

## RADview Preliminary Setting

### Define Business Entities

Create two Business Entities: Service Provider for the Cloud and Customer for the Services.

### Define the Policies

Define a new policy to determine the SLA parameters that the service will have to meet:

* Availability
* Frame Loss Ratio (FLR)
* Average Frame Delay
* Average Frame Delay Variation

# Building the RADview Map

## Define the Catalog

### Define the CoS: Priority, p-bit, Queue

Define the CoS Catalog for Platinum, Gold and Best Effort Services, according to the following parameters:

|  |  |  |  |
| --- | --- | --- | --- |
| CoS Catalog | | | |
| CoS Name | p-bit | Queue | p-bit Marking |
| Platinum | 5 | 0.Strict | No Color Marking |
| Gold | 2 | 4.WFQ |
| Best Effort | 1 | 5.WFQ |
| NO\_Data\_1 | 7 | 7.WFQ |
| NO\_Data\_2 | 7 | 7.WFQ |
| NO\_Data\_3 | 7 | 7.WFQ |
| NO\_Data\_4 | 7 | 7.WFQ |
| NO\_Data\_5 | 7 | 7.WFQ |

### Define the Ethernet Bandwidth

Define the ETH BW Catalog according to the following parameters:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BW Catalog | | | | |
| Name | CIR [kbps] | EIR [kbps] | CBS [bytes] | EBS [bytes] |
| CIR=10M\_EIR=0M | 10000 | -- | 64000 | -- |
| CIR=9M\_EIR=0M | 9000 | -- | 64000 | -- |
| CIR=1M\_EIR=9M | 1000 | 9000 | 64000 | 64000 |
| EIR=10M | -- | 10000 | -- | 64000 |
| Shaper=10M\_CIR | 10000 | -- | 64000 | -- |

### Define the Service Catalog

1. Define the service catalog that will determine the VLAN manipulation and the OAM parameters for the **Mobile E-Line** services according to the following table:

| # | Service Catalog Name | Service Type | Classification | CoS | BW | | OAM & PM | Service VLAN Manipulation |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Policer | Shaper |
| **1** | **1\_Single\_Vlan\_100** | Single CoS | Vlan+p-bit (100,0-7) | Platinum | CIR=10M EIR=0M | N/A | Yes | No Manipulation |
| **2** | **2\_Single\_Vlan\_101** | Single CoS | Vlan+p-bit (101,0-7) | Platinum | CIR=10M EIR=0M | N/A | Yes | No Manipulation |

1. Define the service catalog that will determine the VLAN manipulation and the OAM parameters for the **Business** **E-Line** services according to the following table:

| **#** | **Service Catalog Name** | **Service Type** | **Classification** | **CoS** | **BW** | | **OAM & PM** | **Service  VLAN Manipulation** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Policer** | **Shaper** |
| **3** | **3\_Single\_Vlan\_200** | Single CoS | Vlan+p-bit (200,0-7) | Platinum | CIR=10M EIR=0M | N/A | Yes | No Manipulation |
| **4** | **4\_Single\_Vlan\_201** | Single CoS | Vlan+p-bit (201,0-7) | Platinum | CIR=10M EIR=0M | N/A | Yes | No Manipulation |
| **5** | **5\_Multi\_Vlan\_210** | Multi CoS | Vlan+p-bit (210,5) | Platinum | CIR=9M EIR=0M | Shaper=10M | Yes | No Manipulation |
| Vlan+p-bit (210,2) | Gold | CIR=1M EIR=9M |
| Vlan+p-bit (210,0-1,3-4,6-7) | Best Effort | EIR=10M |

### Define the Test Catalog

Create the Y.1564 Test Catalog that will define the parameters required to test each of the services according to its SLA definitions, as following:

* Test Scope: Configuration + Performance
* CIR Steps(%): 25, 50, 75, 100
* Test Duration Per CoS: 60 sec.
* Performance Test Duration: Custom, 1 min
* No Policer on responder.

## Add the Entities (ETXs and Cloud)



1. Create a new Level for this PoC and add the ETXs to the RADview map.
2. Verify the color of each entity is green or orange and that there is an SNMP Ping reply to each of the ETXs.

|  |  |  |
| --- | --- | --- |
| **NE Name** | **Product** | **IP Address (As defined  in Preliminary Setting)** |
| ETX-5 | ETX-5300 | 172.18.170.177 |
| ETX-205A\_Mobile | ETX-205A | 172.18.170.178 |
| MiNID\_Mobile | MiNID | 172.18.170.179 |
| ETX-203AX\_Business | ETX-203AX | 172.18.170.182 |
| MiNID\_ Business | MiNID | 172.18.170.183 |

1. Create the Cloud according to the following parameters:

| Cloud Properties | | | |
| --- | --- | --- | --- |
| Domain Name | Cloud Access Point | Connected NE | CoS to p-bit |
| PSN\_Cloud | PSN\_ETX-5 | ETX-5 (LAG 1) | Network Default |
|  | PSN\_ MiNID\_Mobile | MiNID\_Mobile |
| PSN\_ ETX-205A | ETX-205A (LAG 1) |
|  | PSN\_ ETX-203AX | ETX-203AX (ETH 1) |
|  | PSN\_ MiNID\_Business | MiNID\_Business |

## Create Links between the Devices

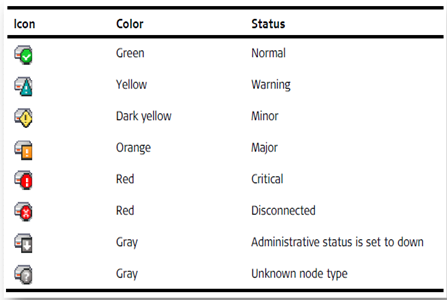


Create Links between each two entities on the map according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Link Properties | | | |
| Link Name | | End Point A | End Point Z |
| 1 | ETX-5\_to\_Cloud | ETX-5300 (Port LAG 1) | PSN\_Cloud (AP PSN\_ETX-5) |
| 2 | MiNID\_Mobile\_to\_Cloud | MiNID\_Mobile | PSN\_Cloud (AP PSN\_ MiNID\_Mobile) |
| 3 | ETX-205A\_to\_Cloud | ETX-205A (Port LAG 1) | PSN\_Cloud (AP PSN\_ ETX-205A) |
| 4 | ETX-203AX\_to\_Cloud | ETX-203AX (Port ETH 1) | PSN\_Cloud (AP PSN\_ ETX-203AX) |
| 5 | MiNID\_Business\_to\_Cloud | MiNID\_Business | PSN\_Cloud (AP PSN\_ MiNID\_Business) |

## Define the Trap Sync and Alarm Sync

1. For each ETX, verify that the Trap Sync Group presents the IP address of the MNG station (right click on each ETX icon>Fault>Trap Sync Groups).
2. For each ETX, activate the Alarm Sync (right click on each ETX icon>Fault> Alarm Sync) and verify the icon color is updated according to the following table:



## Define Statistics Collection Job

The Performance Monitoring portal uses the statistics that are generated by the devices belonging to the service. A statistics collection job defines a process that gathers the statistics for the PM portal.

1. Verify there is an active TFTP server installed on the PC running the RADview server application.
2. Create a new job to collect statistics every 15 minutes from all ETXs.
3. Verify that the job was successfully executed by running an Active Job to collect statistics.
4. After a few minutes, the job will be completed with a warning. Verify that the reason for this warning is that a given NE doesn’t have statistic data to collect.

# Service Provisioning and Testing

## Mobile E-Line Services



### Test Case 1: Single CoS; ETX-5 to MiNID\_Mobile

**Service Provisioning**

1. Create a Single CoS service between ETX-5 and MiNID\_Mobile according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Name  (Service Catalog Name)** | **Service End Points** | | **Vlan Manipulation** |
| **A-Point** | **Z-Point** |
| 1\_Single\_Vlan\_100 | ETX-5 Port 1/1 | MiNID\_Mobile | No Manipulation |

1. Verify the service was successfully created.

**Test Procedure**

|  |  |  |  |
| --- | --- | --- | --- |
| Rate & CoS Preservation Test | | | |
| # | Action | Expected Result | Pass/Fail |
|  | Set the ETH generator to transmit 100 Mb data stream with VLAN 100, p-bits 0-7 between ETX-5 port 1/1 and MiNID\_Mobile. |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * Each data stream is tagged with VLAN 100 and the same p-bit it was generated. | **Pass** |
| OAM Test | | | |
|  | Check the OAM MEP status | The Remote MEP status is OK and the MAC address is indeed of the remote ETX. | **Pass** |
| PM Portal | | | |
|  | Let the traffic run for about an hour and open the PM Portal report |  |  |
|  | Check that the OAM KPI parameters value (Availability, Delay , Frame Loss ratio) are according to what you configured under the Policies – [2.2.2 Define the Policies](#_Define_the_Policies) | Availability, Delay and Frame Loss ratio are according to the Policies. | **Pass** |
|  | Check the Utilization of the services | The utilization for the service is 10 Mb | **Pass** |

### Test Case 2: Single CoS; ETX-5 to ETX-205A

**Service Provisioning**

. Create a Single CoS service between ETX-5300 and ETX-205A according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Name  (Service Catalog Name)** | **Service End Points** | | **Vlan Manipulation** |
| **A-Point** | **Z-Point** |
| **2\_Single\_Vlan\_101** | ETX-5 Port 1/1 | ETX-205 Port 3 | No Manipulation |

. Verify the service was successfully created.

**Test Procedure**

|  |  |  |  |
| --- | --- | --- | --- |
| Rate & CoS Preservation Test | | | |
| # | Action | Expected Result | Pass/Fail |
|  | Set the ETH generator to transmit a 100 Mb data stream with VLAN 100, p-bits 0-7 between ETX-5 port 1/1 and ETX-205A Port 3. |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * Each data stream is tagged with VLAN 100 and the same p-bit it generated. | **Pass** |
| OAM Test | | | |
|  | Check the OAM MEP status | The Remote MEP status is OK and the MAC address is indeed of the remote ETX. | **Pass** |
| Y.1564 Test | | | |
|  | Run a Y.1564 test according to the test catalog you created – see [3.1.1.4 Define the Test Catalog](#_Define_the_Test) | * The Y.1564 Test was successfully completed. * All Y.1564 tests passed. | **Pass** |
|  | Open the Y.1564 Summary report | * FLR (Frame Loss Ratio), FTD (Frame Transfer Delay), FDV (Frame Delay Variation) and Availability are within SAC (Service Acceptance Criteria) limits | **Pass** |
| PM Portal | | | |
|  | Let the traffic run for about an hour and open the PM Portal report |  |  |
|  | Check that the OAM KPI parameter values (Availability, Delay , Frame Loss ratio) are according to what you configured in Policies – [2.2.2 Define the Policies](#_Define_the_Policies) | Availability, Delay, Frame Loss ratio is according to the Policies. | **Pass** |
|  | Check the Utilization of the services | The utilization for the service is 10 Mb | **Pass** |
| 1588 | | | |
|  | Check the 1588 status on the ETX-5300 (Master) and the ETX-205A (Slave) | 1588 clock is locked | **Pass** |

## Business E-Line Services

### Test Case 3: Single CoS; ETX-5 to MiNID\_Business

**Service Provisioning**

. Create a Single CoS service between ETX-5 and MiNID\_Business according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Name  (Service Catalog Name)** | **Service End Points** | | **Vlan Manipulation** |
| **A-Point** | **Z-Point** |
| **3\_Single\_Vlan\_200** | ETX-5 Port 1/2 | MiNID\_Business | No Manipulation |

. Verify the service was successfully created.

**Test Procedure**

|  |  |  |  |
| --- | --- | --- | --- |
| Rate & CoS Preservation Test | | | |
| # | Action | Expected Result | Pass/Fail |
|  | Set the ETH generator to transmit a 100 Mb data stream with VLAN 200, p-bits 0-7 between ETX-5 port 1/2 and MiNID\_Mobile. |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * Each data stream is tagged with VLAN 200 and the same p-bit it was generated. | **Pass** |
| OAM Test | | | |
|  | Check the OAM MEP status | The Remote MEP status is OK and the MAC address is indeed of the remote ETX. | **Pass** |
| PM Portal | | | |
|  | Let the traffic run for about an hour and open the PM Portal report |  |  |
|  | Check that the OAM KPI parameters value (Availability, Delay , Frame Loss ratio) are according to what you configured under the Policies – [2.2.2 Define the Policies](#_Define_the_Policies) | Availability, Delay and Frame Loss ratio are according to the Policies. | **Pass** |
|  | Check the Utilization of the services | The utilization for the service is 10 Mb | **Pass** |

### Test Case 4: Single CoS; ETX-5 to ETX-203AX

**Service Provisioning**

. Create a Single CoS service between ETX-5300 and ETX-203AX according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Name  (Service Catalog Name)** | **Service End Points** | | **Vlan Manipulation** |
| **A-Point** | **Z-Point** |
| **4\_Single\_Vlan\_201** | ETX-5 Port 1/2 | ETX-203AX Port 3 | No Manipulation |

. Verify the service was successfully created.

##### Test Procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Rate & CoS Preservation Test | | | |
| # | Action | Expected Result | Pass/Fail |
|  | Set the ETH generator to transmit 100 Mb data stream with VLAN 201 p-bits 0-7 between ETX-5 port 1/2 and ETX-203AX Port 3. |  |  |
|  | Analyze the traffic receive at the ETH generator on both sides | * The total traffic rate is 10 Mb * Each data stream is tagged with Vlan 341 and the same p-bit it was generated. | **Pass** |
| OAM Test | | | |
|  | Check the OAM MEP status | The Remote MEP status is OK and the MAC address is indeed of the remote ETX. | **Pass** |
| Y.1564 Test | | | |
|  | Run an Y.1564 test according to the test catalog you created – see [3.1.1.4 Define the Test Catalog](#_Define_the_Test) | * The Y.1564 Test was successfully completed. * All Y.1564 Tests passed. | **Pass** |
|  | Open the Y.1564 Summary report | * FLR (Frame Loss Ratio), FTD (Frame Transfer Delay), FDV (Frame Delay Variation) and Availability are within SAC (Service Acceptance Criteria) limits | **Pass** |
| PM Portal | | | |
|  | Let the traffic run for about an hour and open the PM Portal report |  |  |
|  | Check that the OAM KPI parameter values (Availability, Delay , Frame Loss ratio) are according to what you configured in Policies – [2.2.2 Define the Policies](#_Define_the_Policies) | Availability, Delay and Frame Loss ratio are according to the Policies. | **Pass** |
|  | Check the Utilization of the services | The utilization for the service is 10 Mb | **Pass** |

### Test Case 5: Multi CoS; ETX-5 to ETX-203AX

**Service Provisioning**

. Create a Multi CoS service between ETX-5 and ETX-203AX according to the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Service Name  (Service Catalog Name)** | **Service End Points** | | **Vlan Manipulation** |
| **A-Point** | **Z-Point** |
| **5\_Multi\_Vlan\_210** | ETX-5 Port 1/2 | ETX-203AX Port 3 | No Manipulation |

. Verify the service was successfully created.

**Test Procedure**

|  |  |  |  |
| --- | --- | --- | --- |
| Rate & CoS Preservation Test | | | |
| # | Action | Expected Result | Pass/Fail |
|  | Set the ETH generator to transmit:   * 100 Mb data stream with VLAN 210, p-bit 5 * 100 Mb data stream with VLAN 210, p-bit 2 * 100 Mb data stream with VLAN 210, p-bit 0,1,3,4,6,7 |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * The data rate of the **Platinum** stream is 9 Mb and it is tagged with VLAN 210, p-bit 5. * The data rate of the **Gold** is 1 Mb and it is tagged with VLAN 210, p-bit 2. * The data rate of the **Best Effort** stream is 0. | **Pass** |
|  | Set the ETH generator to transmit:   * 100 Mb data stream with VLAN 210, p-bit 5 * 100 Mb data stream with VLAN 210, p-bit 0,1,3,4,6,7 |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * The data rate of the **Platinum** stream is 9 Mb * The data rate of the **Best Effort** stream (C-VLAN 210, p-bit 0,1,3,4,6,7) is 1 Mb. | **Pass** |
|  | Set the ETH generator to transmit:   * 100 Mb data stream with VLAN 210, p-bit 2 * 100 Mb data stream with VLAN 210, p-bit 0,1,3,4,6,7 |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * The data rate of the **Gold** stream is 10 Mb * The data rate of the **Best Effort** stream is 0 Mb. | **Pass** |
|  | Set the ETH generator to transmit:   * 100 Mb data stream with VLAN 210, p-bit 0,1,3,4,6,7 |  |  |
|  | Analyze the traffic received at the ETH generator on both sides | * The total traffic rate is 10 Mb * The data rate of the **Best Effort** stream is 10 Mb. | **Pass** |
| OAM Test | | | |
|  | Check the OAM MEP status | The Remote MEP status is OK and the MAC address is indeed of the remote ETX. | **Pass** |
| Y.1564 Test | | | |
|  | Run a Y.1564 test according to the test catalog you created – see [3.1.1.4 Define the Test Catalog](#_Define_the_Test) | * Y.1564 Test was successfully completed. * All Y.1564 Tests passed. | **Pass** |
|  | Open the Y.1564 Summary report | * FLR (Frame Loss Ratio), FTD (Frame Transfer Delay), FDV (Frame Delay Variation) and Availability are within SAC (Service Acceptance Criteria) limits | **Pass** |
| PM Portal | | | |
|  | Let the traffic run for about an hour and open the PM Portal report |  |  |
|  | Check that the OAM KPI parameter values for each service (Availability, Delay , Frame Loss ratio) are according to what you configured in Policies – [2.2.2 Define the Policies](#_Define_the_Policies) | Availability, Delay, Frame Loss ratio are according to the Policies. | **Pass** |
|  | Check the Utilization of the services | The utilization for the service is 10 Mb | **Pass** |

1. Appendix A - ETX-5 Preliminary Setting
   1. Hardware, Queues and Port Configuration

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| #HW Configuration  #config slot 1 card-type eth gbe-20-utp  #config slot 1 no shutdown  #\*when IO card ready run script  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Classification\_Key\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config port ethernet 1/1 classification-key vlan p-bit  config port ethernet 1/2 classification-key vlan p-bit  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*IO\_QUEUE\_GROUP\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure qos queue-group-profile q\_group\_2\_level\_default\_IO1/1  inherited-from q\_group\_2\_level\_default  exit all  configure qos queue-group-profile q\_group\_2\_level\_default\_IO1/2  inherited-from q\_group\_2\_level\_default  exit all #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*MC\_QUEUE\_GROUP\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure qos queue-group-profile q\_group\_3\_Redundancy\_LAG\_1  inherited-from q\_group\_3\_level\_default  exit all #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*SAG\_QUEUE\_GROUP\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure qos queue-group-profile q\_group\_2\_level\_default\_SAG1/1  inherited-from q\_group\_SAG\_2\_level\_default  exit all  configure qos queue-group-profile q\_group\_2\_level\_default\_SAG1/2  inherited-from q\_group\_SAG\_2\_level\_default  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*BIND\_QG\_TO\_PORTS\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config port sag 1/1 queue-group profile q\_group\_2\_level\_default\_SAG1/1  config port sag 1/2 queue-group profile q\_group\_2\_level\_default\_SAG1/2  config port ethernet 1/1 queue-group profile q\_group\_2\_level\_default\_IO1/1  config port ethernet 1/2 queue-group profile q\_group\_2\_level\_default\_IO1/2  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Color-Mapping\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config qos color-map-profile dei-color-map classification dei  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*LAG and PORT\_ACTIVATION\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config port l2cp-profile "l2cpLAG\_OAM"  mac 01-80-C2-00-00-02 peer  exit all  config port tag-ether-type 0x88a8  config port lag 1  name "LAG\_Redundancy\_1"  queue-group profile "q\_group\_3\_Redundancy\_LAG\_1"  admin-key ten-giga-ethernet  bind ethernet main-a/1  bind ethernet main-a/2  lacp tx-activity active tx-speed slow  no shutdown  exit all  config port ethernet main-a/1 no shutdown  config port ethernet main-a/2 no shutdown  config port ethernet 1/1 no shutdown  config port ethernet 1/2 no shutdown  exit all |

* 1. Local Management Set Up

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| #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*SNMP Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure system name "ETX-5"  exit all  config management  snmp  target-params "PC\_69"  message-processing-model snmpv3  version usm  security name "initial" level no-auth-no-priv  no shutdown  exit  target "a"  target-params "PC\_69"  address udp-domain 172.17.150.69  no shutdown  tag-list "unmasked"  trap-sync-group 1  exit  config-change-notification  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*configure port svi\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  exit all  configure port svi 1 bridge  exit all  configure port svi 2 bridge  exit all  configure port svi 99 router  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End port svi Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Marking-Mapping\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config qos marking-profile "mark1" color-aware green-yellow dei mapping  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End Marking-Mapping\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Bridge 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config bridge 1  port 1  bind svi 1  no shutdown  exit  port 2  bind svi 2  no shutdown  exit  vlan 4094  tagged-egress 1,2  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End Bridge 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Classifier Profile Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config flows classifier-profile "all" match-any match all  config flows classifier-profile "untagged" match-any match untagged  config flows classifier-profile "VLAN\_4094" match-any match vlan 4094  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End Classifier Profile Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Flows\_Inband\_Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config flows flow "Lacp"  classifier "untagged"  l2cp profile "l2cpLAG\_OAM"  ingress-port lag 1  egress-port ethernet main-a/4 queue-map-profile "QueueMapDefaultProfile" block 0/1  no shutdown  exit all  config flows flow "mng\_LAG\_R\_bridge\_in"  classifier "VLAN\_4094"  ingress-port lag 1  egress-port svi 1  no shutdown  exit all  config flows flow "mng\_LAG\_R\_bridge\_out"  classifier "VLAN\_4094"  ingress-port svi 1  egress-port lag 1 queue-map-profile "QueueMapDefaultProfile" block 0/1  no shutdown  exit all  config flows flow "mng\_bridge\_router"  classifier "VLAN\_4094"  ingress-port svi 2  egress-port svi 99  vlan-tag pop vlan  no shutdown  exit all  config flows flow "mng\_router\_bridge"  classifier "all"  ingress-port svi 99  egress-port svi 2  vlan-tag push vlan 4094 p-bit profile "mark1" tag-ether-type 0x8100  no shutdown  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End Flows\_Inband\_Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Router \_Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config router 1  name "Router#1"  interface 1  address 172.18.170.180/24  bind svi 99  no shutdown  exit  static-route 0.0.0.0/0 address 172.18.170.1  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End Router \_Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |
| * 1. 1588 Master Configuration   #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1588-master\_to\_port \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  exit all  config port svi 202 router  exit all  config flows classifier-profile Vlan402 match-any  match vlan 402  exit all  config qos marking-profile "mark\_1588" color-aware green-yellow dei mapping  mark 0..7 green to 2 dei green  mark 0..7 yellow to 2 dei yellow  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1588 master main-a/1\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*    config flows flow 1588\_m\_lag\_1\_svi\_202  classifier Vlan402  ingress-port lag 1  egress-port svi 202  vlan-tag pop vlan  no shutdown  exit all  config flows flow 1588\_svi\_202\_main\_a\_1  classifier all  ingress-port svi 202  egress-port lag 1 queue-map-profile QueueMapDefaultProfile block 0/2  vlan-tag push vlan 402 p-bit profile mark\_1588  no shutdown  exit all  configure router 1 interface 4 loopback  #master ip ptp  address 30.30.30.30/32  no shutdown  exit all  configure router 1 interface 5  #master inter for int  address 50.50.50.2/24  bind svi 202  no shutdown  exit all  configure system clock master main-a/1 ptp  ip-address 30.30.30.30  sync-rate 128pps  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*MASTER\*as slave check check\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  no shutdown  exit all |

1. Appendix B - ETX-2 Preliminary Setting
   1. ETX-205A\_Mobile - Queues and Management Configuration

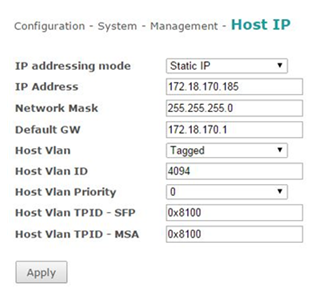
|  |
| --- |
| #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*QUEUE\_GROUP\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  exit all  config qos queue-group-profile lag  exit all  config qos queue-group-profile QGN3  exit all  config port eth 3 queue-group profile QGN3  exit all  config qos queue-group-profile QGN4  exit all  config port eth 4 queue-group profile QGN4  exit all  config qos queue-group-profile QGN5  exit all  config port eth 5 queue-group profile QGN5  exit all  config qos queue-group-profile QGN6  exit all  config port eth 6 queue-group profile QGN6  exit all  config port l2cp-profile lacp  mac 0x02 peer  exit all  config port ethernet 1 l2cp profile lacp  config port ethernet 2 l2cp profile lacp  config port ethernet 1 queue-group profile lag  config port ethernet 2 queue-group profile lag  config port lag 1  mode redundancy  bind ethernet 1  bind ethernet 2  admin-key giga-ethernet  lacp tx-activity passive tx-speed slow  no shutdown  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*SNMP Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure system name "ETX-205A\_Mobile"  exit all  config management  snmp  target-params "PC\_69"  message-processing-model snmpv3  version usm  security name "initial" level no-auth-no-priv  no shutdown  exit  target "PC\_69"  target-params "PC\_69"  address udp-domain 172.17.150.69  no shutdown  tag-list "unmasked"  trap-sync-group 1  exit  config-change-notification  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Inband MNG \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config port svi 1  no shutdown  exit all  config flows classifier-profile "all" match-any match all  config flows classifier-profile "VLAN\_4094" match-any match vlan 4094  config flows flow "Eth\_1\_svi\_1"  classifier "VLAN\_4094"  no policer  vlan-tag pop vlan  ingress-port ethernet 1  egress-port svi 1 queue 0  no shutdown  exit all  config flows flow "svi\_1\_Eth\_1"  classifier "all"  no policer  ingress-port svi 1  egress-port ethernet 1 queue 0 block 0/1  vlan-tag push vlan 4094 p-bit fixed 0  no shutdown  exit all  config router 1  name "Router#1"  interface 1  address 172.18.170.178/24  bind svi 1  no shutdown  exit  static-route 0.0.0.0/0 address 172.18.170.1  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1588 Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  exit all  config port svi 3  no shutdown  exit all  config flows classifier-profile Vlan402 match-any  match vlan 402  exit all  config flows flow 1588\_3\_input  classifier "Vlan402"  ingress-port ethernet 1  egress-port svi 3  vlan-tag pop vlan  no shutdown  exit all  config flows flow 1588\_3\_out  classifier all  ingress-port svi 3  egress-port ethernet 1 queue 0 block 0/2  vlan-tag push vlan 402 p-bit fixed 2  no shutdown  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Router\_Interface\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure router 1  interface 3  address 50.50.50.3/24  bind svi 3  no management-access  no shutdown  exit  static-route 30.30.30.30/32 address 50.50.50.2  exit  peer 2 ip 30.30.30.30  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1588\_slave \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure system clock  domain 1  source 1 recovered 1  priority 1  quality-level ssm-based  wait-to-restore 0  clear-wait-to-restore  exit  exit  recovered 1 ptp  wait-to-restore 0  master 1  peer 2  priority 1  sync grant-period 300  announce grant-period 300  delay-respond grant-period 300  quality-level type1-ssm-based  no shutdown  exit  no shutdown  exit |

* 1. ETX-203AX\_Business - Queues and Management Configuration

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| #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*QUEUE\_GROUP\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  exit all  config qos queue-group-profile QGN1  exit all  config port eth 1 queue-group profile QGN1  exit all  config qos queue-group-profile QGN2  exit all  config port eth 2 queue-group profile QGN2  exit all  config qos queue-group-profile QGN3  exit all  config port eth 3 queue-group profile QGN3  exit all  config qos queue-group-profile QGN4  exit all  config port eth 4 queue-group profile QGN4  exit all  config qos queue-group-profile QGN5  exit all  config port eth 5 queue-group profile QGN5  exit all  config qos queue-group-profile QGN6  exit all  config port eth 6 queue-group profile QGN6  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*SNMP Configuration\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  configure system name "ETX-203AX\_Business"  exit all  config management  snmp  target-params "PC\_69"  message-processing-model snmpv3  version usm  security name "initial" level no-auth-no-priv  no shutdown  exit  target "a"  target-params "PC\_69"  address udp-domain 172.17.150.69  no shutdown  tag-list "unmasked"  trap-sync-group 1  exit  config-change-notification  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END SNMP Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Inband MNG \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  config port svi 1  no shutdown  exit all  config flows classifier-profile "all" match-any match all  config flows classifier-profile "VLAN\_4094" match-any match vlan 4094  config flows flow "Eth\_1\_svi\_1"  classifier "VLAN\_4094"  no policer  vlan-tag pop vlan  ingress-port ethernet 1  egress-port svi 1 queue 0  no shutdown  exit all  config flows flow "svi\_1\_Eth\_1"  classifier "all"  no policer  ingress-port svi 1  egress-port ethernet 1 queue 0 block 0/1  vlan-tag push vlan 4094 p-bit fixed 0  no shutdown  exit all  config router 1  name "Router#1"  interface 1  address 172.18.171.156/24  bind svi 1  no shutdown  exit  static-route 0.0.0.0/0 address 172.18.171.1  exit all  #\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END Inband MNG \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

1. Appendix C – MiNID Preliminary Setting

C.1 MiNID\_Mobile - Management Configuration



C.2 MiNID\_Business - Management Configuration

