ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.8021/Y.1341

Amendment 2
(08/2013)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Packet over Transport aspects – Ethernet over Transport aspects

SERIES Y: GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-GENERATION NETWORKS

Internet protocol aspects – Transport

Characteristics of Ethernet transport network equipment functional blocks

Amendment 2: Updates to the description of the ETH sublayering model, the MIP OAM extraction process and the performance measurement functions

Recommendation ITU-T G.8021/Y.1341 (2012) – Amendment 2

ITU-T G-SERIES RECOMMENDATIONS

TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA AND OPTICAL SYSTEMS CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
MULTIMEDIA QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
PACKET OVER TRANSPORT ASPECTS	G.8000–G.8999
Ethernet over Transport aspects	**G.8000–G.8099**
MPLS over Transport aspects	G.8100–G.8199
Quality and availability targets	G.8200–G.8299
Service Management	G.8600–G.8699
ACCESS NETWORKS	G.9000–G.9999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T G.8021/Y.1341

Characteristics of Ethernet transport network equipment functional blocks

Amendment 2

Updates to the description of the ETH sublayering model, the MIP OAM extraction process and the performance measurement functions

Summary

Amendment 2 to Recommendation ITU-T G.8021/Y.1341 (2012) updates the description concerning performance measurement functions. It also covers the update of ETH sublayering model, and MIP OAM extraction process.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.8021/Y.1341	2004-08-22	15
1.1	ITU-T G.8021/Y.1341 (2004) Amd. 1	2006-06-06	15
2.0	ITU-T G.8021/Y.1341	2007-12-22	15
2.1	ITU-T G.8021/Y.1341 (2007) Amd. 1	2009-01-13	15
2.2	ITU-T G.8021/Y.1341 (2007) Amd. 2	2010-02-22	15
3.0	ITU-T G.8021/Y.1341	2010-10-22	15
3.1	ITU-T G.8021/Y.1341 (2010) Amd. 1	2011-07-22	15
4.0	ITU-T G.8021/Y.1341	2012-05-07	15
4.1	ITU-T G.8021/Y.1341 (2012) Amd. 1	2012-10-29	15
4.2	ITU-T G.8021/Y.1341 (2012) Amd. 2	2013-08-29	15

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Table of Contents

Recommendation ITU-T G.8021/Y.1341

Characteristics of Ethernet transport network equipment functional blocks

Amendment 2

Updates to the description of the ETH sublayering model, the MIP OAM extraction process and the performance measurement functions

1)   Update clause 3

3   Definitions

This Recommendation uses the following terms defined elsewhere:

…

3.1.79   one-way: [ITU-T G.8001]

3.1.80   two-way: [ITU-T G.8001]

3.1.81   single-ended: [ITU-T G.8001]

3.1.82   dual-ended: [ITU-T G.8001]

2)   Update clause 5

5   Methodology and conventions

For the basic methodology to describe transport network functionality of network elements, refer to clause 5 of [ITU-T G.806]. For Ethernet-specific extensions to the methodology, see clause 5 of [ITU-T G.8010].

All process descriptions in clauses 6, 8 and 9 use the SDL methodology defined in [ITU-T Z.100].

Pseudocode in this Recommendation uses "switch" statements where each "case" statement is exclusive (i.e., "case" statements do not fall through to each other).

3)   Update clauses 8.1.10 and 8.1.10.1

8.1.10   Single-ended dDelay measurement (DM) processes

8.1.10.1   Overview

Figure 8-47 shows the different processes inside MEPs and MIPs that are involved in the on-demand single-ended delay measurement protocol.

NOTE – In previous versions of this Recommendation, single-ended delay measurement was known as delay measurement. With regard to those definitions, refer to [ITU-T G.8001].

The MEP on-demand OAM source insertion process is defined in clause 9.4.1.1, the MEP on-demand OAM sink extraction process in clause 9.4.1.2, the MIP on-demand OAM sink extraction process in clause 9.4.2.2, and the MIP on-demand OAM source insertion process in clause 9.4.2.1. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and D signals going through an MEP and MIP;

the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
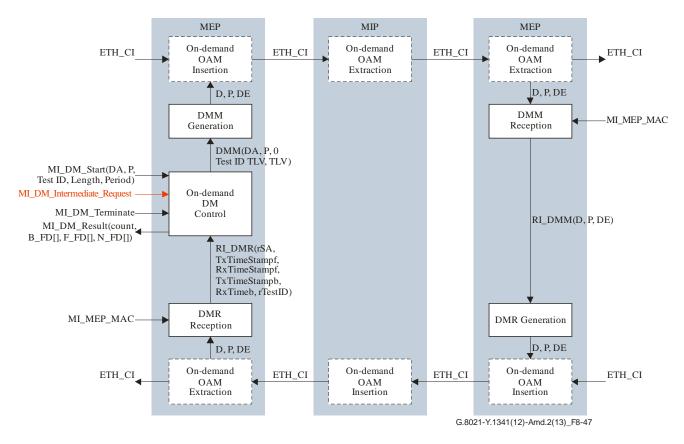

G.8021-Y.1341(12)-Amd.2(13)_F8-47

**Figure 8-47 – Overview of processes involved with on-demand
single-ended delay measurement**

The on-demand DM control process controls the on-demand DM protocol. The protocol is activated upon receipt of the MI_DM_Start(DA,P,Test ID,Length,Period) signal and remains activated until the MI_DM_Terminate signal is received. The result is communicated via the MI_DM_Result(count, B_FD[], F_FD[] ,N_FD[]) signal when the process is terminated by the MI_DM_Terminate signal or when an intermediate result is requested via the MI_DM_Intermediate_Request signal. If the on-demand DM control process activates the multiple monitoring on different CoS levels simultaneously, each result is independently managed per CoS level. Optional test ID TLVs can be utilized to distinguish each measurement if multiple measurements are simultaneously activated in an ME. If the protocol is used in multipoint-to-multipoint environments, the multicast class 1 address can be used for a DA and the test result is independently managed per peer node.

The DMM generation process generates DMM traffic units that pass through MIPs transparently, but are received and processed by DMM reception processes in MEPs. The DMR generation process may generate a DMR traffic unit in response. This DMR traffic unit also passes transparently through MIPs, but is received and processed by DMR reception processes in MEPs.

At the source MEP side, the DMM generation process stamps the value of the local time to the TxTimeStampf field in the DMM message when the first bit of the frame is transmitted. Note well that at the sink MEP side, the DMM reception process stamps the value of the local time to the RxTimeStampf field in the DMM message when the last bit of the frame is received.

The DMR generation and reception process stamps with the same way as the DMM generation and reception process.

Figure 8-48 shows the different processes inside MEPs and MIPs that are involved in the proactive single-ended delay measurement protocol.

The MEP proactive OAM insertion process is defined in clause 9.2.1.1, the MEP OAM proactive extraction process in clause 9.2.1.2, the MIP OAM extraction process in clause 9.4.2.1, and the MIP OAM insertion process in clause 9.4.2.2. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and D signals going through an MEP and MIP; the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
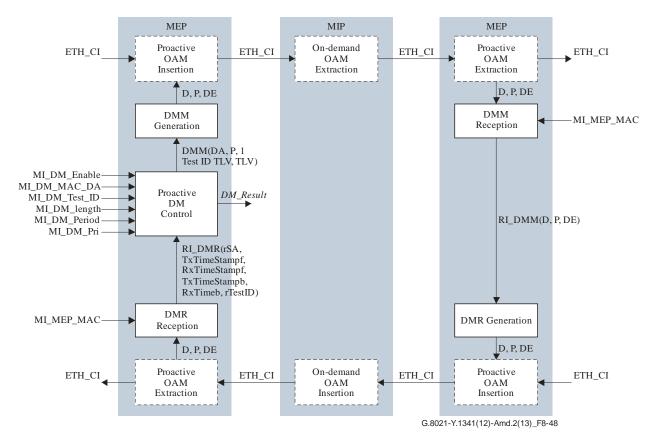

G.8021-Y.1341(12)-Amd.2(13)_F8-48

Figure 8-48 – Overview of processes involved with proactive single-ended delay measurement

The proactive DM control process controls the proactive DM protocol. If MI_DM_Enable is set the DMM frames are sent periodically. The DMM frames are generated with a periodicity determined by MI_DM_Period and with a priority determined by MI_DM_Pri. The result (B_FD, F_FD, N_FD) is reported via a DMR reception. If the proactive DM control process activates the multiple monitoring on different CoS levels simultaneously, each result is independently managed per CoS level. Optional test ID TLVs can be utilized to distinguish each measurement if multiple measurements are simultaneously activated in an ME. If the protocol is used in multipoint-to-multipoint environments, the multicast class 1 address can be used for a DA and the test result is independently managed per peer node.

4) Update clauses 8.1.11 and 8.1.11.1

8.1.11 Dual-endedOne-way delay measurement (1DM) processes

8.1.11.1 Overview

Figure 8-57 shows the different processes inside MEPs and MIPs that are involved in the on-demand dual-endedone-way delay measurement protocol.

The MEP on-demand OAM source insertion process is defined in clause 9.4.1.1, the MEP on-demand OAM sink extraction process in clause 9.4.1.2, and the MIP on-demand OAM sink extraction process in clause 9.4.2.2. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and DE signals going through an MEP and MIP; the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
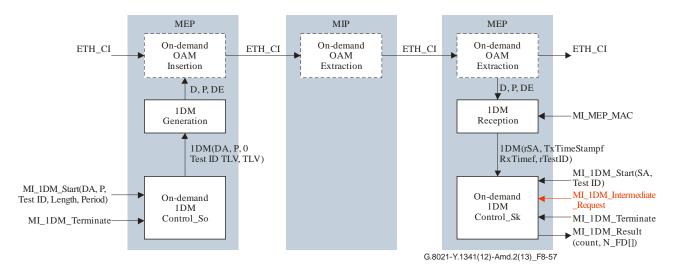

G.8021-Y.1341(12)-Amd.2(13)_F8-57

**Figure 8-57 – Overview of processes involved with on-demand
<u>dual-ended</u><s>one-way</s> delay measurement**

The on-demand 1DM protocol is controlled by the on-demand 1DM Control_So and 1DM Control_Sk processes. The on-demand 1DM Control_So process triggers the generation of 1DM traffic units upon receipt of an MI_1DM_Start(DA,P,Test ID,Length,Period) signal. The on-demand 1DM Control_Sk process processes the information from received 1DM traffic units after receiving the MI_1DM_Start(SA,Test ID) signal. The result is communicated by the sink MEP when the on-demand 1DM Control_Sk process is terminated by the MI_1DM_Terminate signal or when an intermediate result is requested via the MI_1DM_Intermediate_Request signal.

The 1DM generation process generates 1DM messages that pass transparently through MIPs and are received and processed by the 1DM reception process in MEPs.

At the source MEP side, the 1DM generation process stamps the value of the local time to the TxTimeStampf field in the 1DM message when the first bit of the frame is transmitted. Note well that at the sink MEP side, the 1DM reception process records the value of the local time when the last bit of the frame is received.

Figure 8-58 shows the different processes inside MEPs and MIPs that are involved in the proactive <u>dual-ended </u>delay measurement protocol.
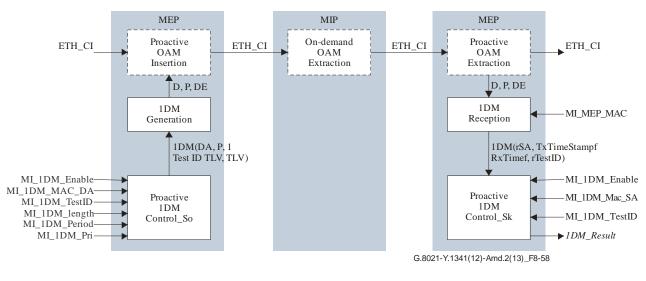
G.8021-Y.1341(12)-Amd.2(13)_F8-58

**Figure 8-58 – Overview of processes involved with proactive
<u>dual-ended</u>~~one-way~~ delay measurement**

The MEP proactive-OAM source insertion process is defined in clause 9.2.1.1, the MEP proactive OAM sink extraction process in clause 9.2.1.2, and the MIP on-demand OAM sink extraction process in clause 9.4.2.2.

The proactive 1DM Control_So process triggers the generation of 1DM traffic units if MI_1DM_Enable signal is set. The 1DM frames are generated with a periodicity determined by MI_1DM_Period and with a priority determined by MI_1DM_Pri. The result (N_FD) is reported via a 1DM reception by the 1DM Control_Sk process.
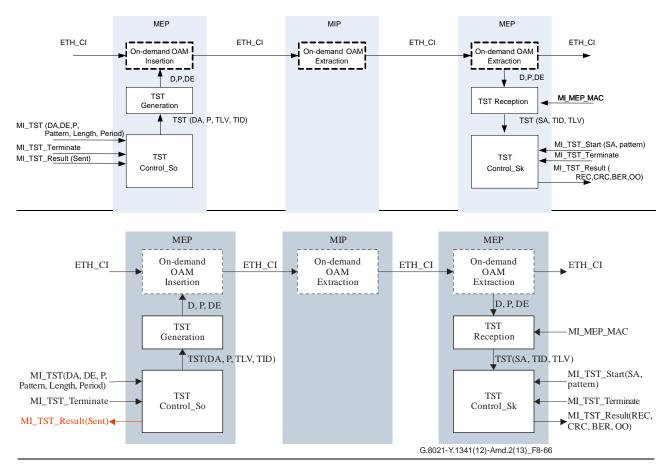
5)   Update Figure 8-66

Figure 8-66 – Overview of processes involved with the test protocol

6)   Update clause 8.1.12.2

8.1.12.2   TST Control_So process

Figure 8-67 defines the behaviour of the TST Control_So process. This process starts~~triggers~~ the transmission of TST traffic units after receiving the MI_Test(DA,DE,P,Pattern,Length,Period) signal. Each~~The~~ transmission of TST traffic units is triggered by the generation of the TST(DA,P,DE,TLV,TID) signal. This is continued until the receipt of the MI_Test_Terminate signal. After receiving this signal the number of triggered TST traffic units is reported back using the MI_Test_Result(Sent) signal.

The TLV field of the TST frames is determined by the Generate(Pattern, Length) function. For "Pattern" the following types are defined:

...

7)   Update clauses 8.1.14 and 8.1.14.1

8.1.14   Single-ended s~~S~~ynthetic loss measurement (SL) processes

8.1.14.1   Overview

Figure 8-81 shows the different processes inside MEPs and MIPs that are involved in the on-demand single-ended synthetic loss measurement protocol.

NOTE – In previous versions of this Recommendation, single-ended synthetic loss measurement was known as synthetic loss measurement. With regard to those definitions, refer to [ITU-T G.8001].

The MEP on-demand OAM insertion process is defined in clause 9.4.1.1, the MEP OAM on-demand extraction process in clause 9.4.1.2, the MIP OAM extraction process in clause 9.4.2.1, and the MIP OAM insertion process in clause 9.4.2.2. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and D signals going through an MEP and MIP; the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
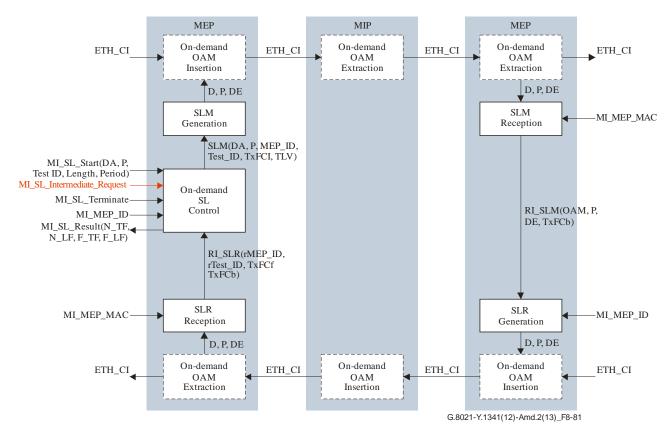

G.8021-Y.1341(12)-Amd.2(13)_F8-81

**Figure 8-81 – Overview of processes involved with an on-demand
<u>single-ended</u> synthetic loss measurement protocol**

The SL protocol is controlled by the on-demand SL control process.

The on-demand SL control process is activated upon receipt of the MI_SL_Start(DA,P,Test_ID,Length,Period) signal and remains activated until the MI_SL_Terminate signal is received. The measured synthetic loss values are output via the MI_SL_Result(N_TF,N_LF,F_TF,F_LF) signal when the process is terminated by the MI_SL_Terminate signal or when an intermediate result is requested via the MI_SL_Intermediate_Request signal.

The SLM generation process generates SLM traffic units that pass through MIPs transparently, but are received and processed by SLM reception processes in MEPs. The SLR generation process may generate an SLR traffic unit in response. This SLR traffic unit also passes transparently through MIPs, but is received and processed by SLR reception processes in MEPs.

Figure 8-82 shows the different processes inside MEPs and MIPs that are involved in the proactive <u>single-ended</u> synthetic loss measurement protocol.

The MEP proactive OAM insertion process is defined in clause 9.2.1.1, the MEP OAM proactive extraction process in clause 9.2.1.2, the MIP OAM extraction process in clause 9.4.2.1, and the MIP OAM insertion process in clause 9.4.2.2. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and D signals going

through an MEP and MIP; the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
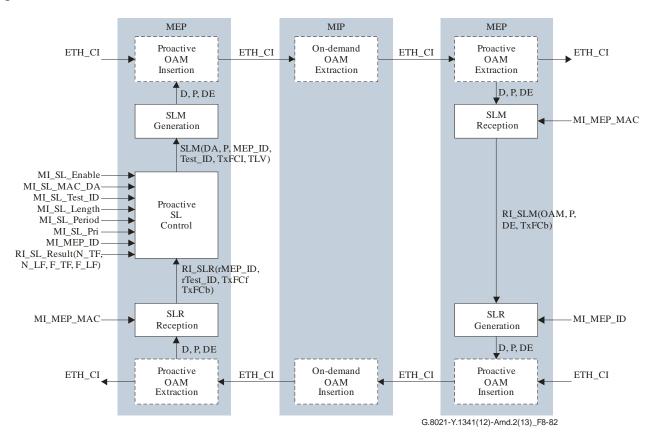

G.8021-Y.1341(12)-Amd.2(13)_F8-82

**Figure 8-82 – Overview of processes involved with a proactive
<u>single-ended</u> synthetic loss measurement protocol**

The SL protocol is controlled by the proactive SL control processes.

The proactive SL control process is activated upon receipt of the MI_SL_Enable signal and remains activated until the signal is deactivated. The measured results are output every 1s using the RI_SL_Result (N_TF, N_LF, F_TF, F_LF) signal.

8)   Update clauses 8.1.15 and 8.1.15.1

8.1.15   <u>Dual-ended</u>~~One-way~~ synthetic loss measurement (1SL) processes

8.1.15.1   Overview

Figure 8-91 shows the different processes inside MEPs and MIPs that are involved in the on-demand <u>dual-ended</u>~~one-way~~ synthetic loss measurement protocol.

<u>NOTE – In previous versions of this Recommendation, dual-ended synthetic loss measurement was known as one-way synthetic loss measurement. With regard to those definitions, refer to [ITU-T G.8001].</u>

The MEP on-demand OAM source insertion process is defined in clause 9.4.1.1, the MEP on-demand OAM sink extraction process in clause 9.4.1.2, the MIP on-demand OAM sink extraction process in clause 9.4.2.2. In summary, they insert and extract ETH_CI OAM signals into and from the stream of ETH_CI_D traffic units and the complementing P and DE signals going through an MEP and MIP; the extraction is based on MEL and Opcode. Furthermore, the insertion process inserts the correct MEL and SA values into the OAM traffic units.
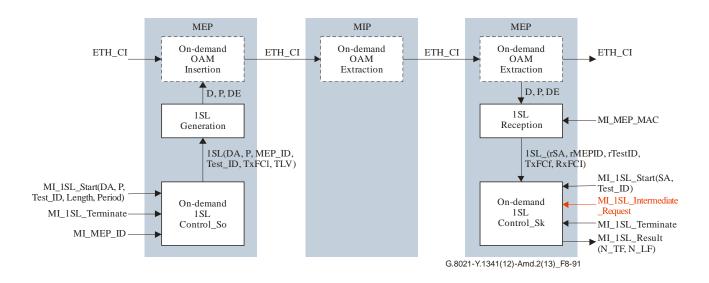
**Figure 8-91 – Overview of processes involved with on-demand
<u>dual-ended</u><s>one-way</s> synthetic loss measurement**

The on-demand 1SL protocol is controlled by the on-demand 1SL Control_So and 1SL Control_Sk processes. The on-demand 1SL Control_So process triggers the generation of 1SL traffic units upon receipt of an MI_1SL_Start(DA,P, Test_ID,Length,Period) signal. The on-demand 1SL Control_Sk process processes the information from received 1SL traffic units after receiving the MI_1SL_Start(SA,Test_ID) signal. The result is communicated by the sink MEP when the process is terminated by the MI_1SL_Terminate signal or when an intermediate result is requested via the MI_1SL_Intermediate_Request signal.

The 1SL generation process generates 1SL messages that pass transparently through MIPs and are received and processed by the 1SL reception process in MEPs.

Figure 8-92 shows the different processes inside MEPs and MIPs that are involved in the proactive <u>dual-ended</u><s>one way</s> synthetic loss measurement protocol.
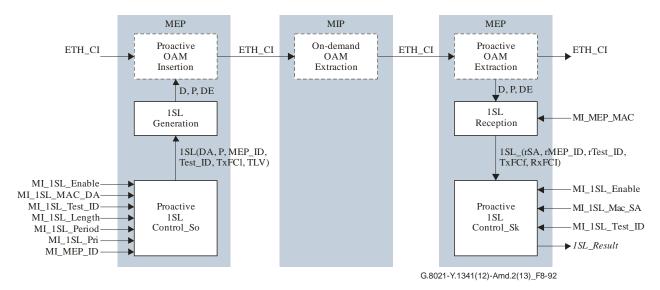

**Figure 8-92 – Overview of processes involved with proactive
<u>dual-ended</u><s>one-way</s> synthetic loss measurement**

The MEP proactive-OAM source insertion process is defined in clause 9.2.1.1, the MEP proactive OAM sink extraction process in clause 9.2.1.2, and the MIP on-demand OAM sink extraction process in clause 9.2.2.2.

The proactive 1SL protocol is controlled by the proactive 1SL Control_So and 1SL Control_Sk processes. The proactive 1SL Control_So process triggers the generation of 1SL traffic units if MI_1SL_Enable signal is set. The 1SL frames are generated with a periodicity determined by MI_1SL_Period and with a priority determined by MI_1SL_Pri. The result is reported every one second by the 1SL Control_Sk process.

9)   Update clause 9

9   Ethernet MAC layer (ETH) functions

Figure 1-1 illustrates all the ETH layer network, server and client adaptation functions. The information crossing the ETH flow point (ETH_FP) is referred to as the ETH characteristic information (ETH_CI). The information crossing the ETH access point (ETH_AP) is referred to as ETH adapted information (ETH_AI).

ETH sublayers can be created by expanding an ETH_FP as illustrated in Figure 9-1.
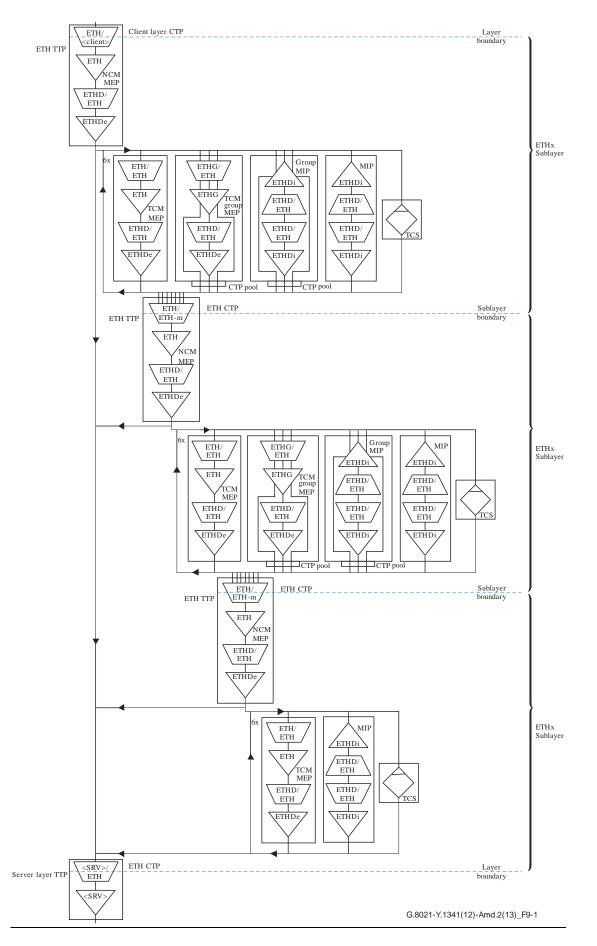
Figure 9-1 – ETH sublayering

Figure 9-1 illustrates the basic flow termination and adaptation functions involved and the possible ordering of these functions. The ETHx/ETH-m functions multiplex ETH_CI streams. The ETHx and ETHG flow termination functions insert and extract the proactive ITU-T G.8013/Y.1731 OAM information (e.g., CCM). The ETHDy flow termination functions insert and extract the on-demand ITU-T G.8013/Y.1731 OAM information (e.g., LBM, LTM). The ETHx/ETH and ETHG/ETH adaptation functions insert and extract the administrative and control ITU-T G.8013/Y.1731 OAM information (e.g., LCK, APS).

Any combination that can be constructed by following the directions in the figure is allowed. Some recursion is allowed as indicated by the arrows upwards; the number next to the arrow defines the number of recursions allowed.

Note that the ETHx sublayers in Figure 9-1 correspond to the ETH0 (top), ETH1 (middle) and ETH2 (bottom) in Figure 7-5 of [ITU-T G.8010].

NOTE – ETHx/ETHG adaptation function is not included in Figure 9-1 because this atomic function is not used in ETH MEP and MIP functions described in clause 9.8.

10)   Update clause 9.1.2

9.1.2   Subnetwork connection protection process

SNC protection with sublayer monitoring based on TCM is supported.

Figure 9-9 shows the involved atomic functions in SNC/S. The ETHx_FT_Sk provides the TSF/TSD protection switching criterion via the ETHx/ETH_A_Sk function (SSF/SSD) to the ETH_C function.
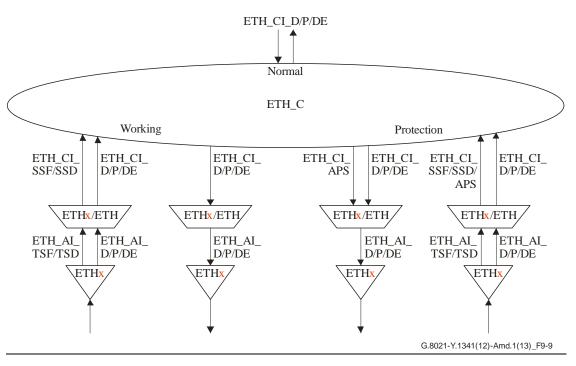

Figure 9-9 – SNC/S atomic functions

NOTE – Since SNC/S is ETH subnetwork protection with sublayer monitoring, ETHx flow termination and ETHx/ETH adaptation functions in Figure 9-9 correspond to ETHT (tandem connection) sublayer where this abbreviation is described in Amendment 1 to [ITU-T G.8010].

11) Update clause 9.1.3

9.1.3 Ring protection control process

Ring protection with inherent, sub-layer, or test trail monitoring is supported.

Figure 9-11 shows a subset of the atomic functions involved, and the signal flows associated with the ring protection control process. This is only an overview of the Ethernet ring protection control process as specified in [ITU-T G.8032]. The ETH_FT_Sk provides the TSF protection switching criterion via the ETHDi/ETH_A_Sk function (SSF). [ITU-T G.8032] specifies the requirements, options and the ring protection protocol supported by the ring protection control process.

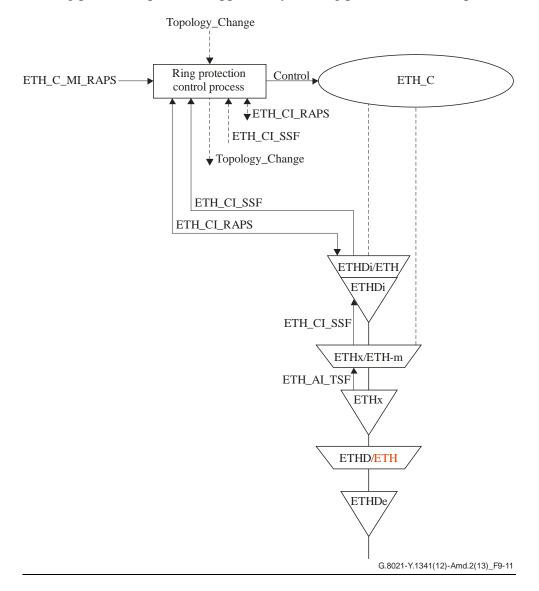G.8021-Y.1341(12)-Amd.2(13)_F9-11

Figure 9-11 – Ring protection atomic functions and control process
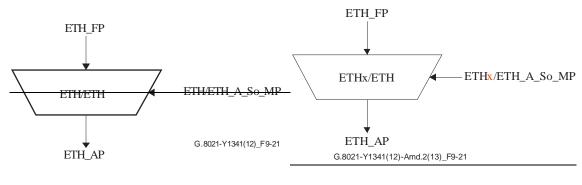
12)   Update Figures 9-21, 9-23, 9-25, 9-27 and 9-29

Figure 9-21 – ETHx/ETH_A_So symbol

Figure 9-23 – ETHx/ETH_A_Sk symbol

Figure 9-25 – ETHx/ETH-m_A symbol
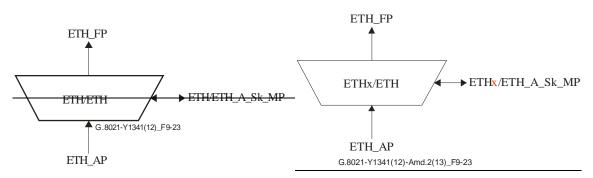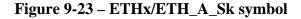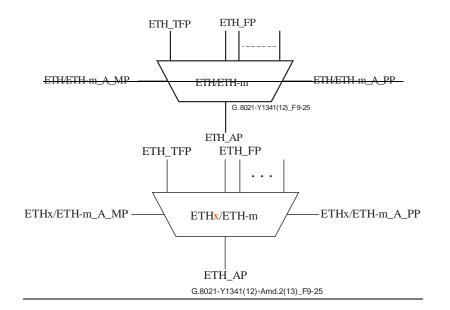
Figure 9-27 – ETHx/ETH-m_A_So symbol

Figure 9-29 – ETHx/ETH-m_A_Sk symbol

13)   Update clause 9.4.2.2

9.4.2.2   ETH diagnostic flow termination sink function for MIPs (ETHDi_FT_Sk)

• • •

MIP OAM extraction process

The MIP OAM extraction process extracts OAM traffic units that are processed in the ETHDi_FT_Sk process from the stream of traffic units as defined in the following pseudo code:

```
if (TYPE=<ETHOAM>) and (MEL=MI_MEL) then
  switch(OPC) {
  case <LBM>: extract ETH-LBM OAM traffic unit  and forward to LBM Port
              forward one copy of ETH-LBM OAM traffic unit to LBM Port
              forward one copy of ETH-LBM OAM traffic unit to Data Port
  case <LTM>: extract ETH-LTM OAM traffic unit and forward to LTM Port
  default: forward ETH_CI traffic unit to Data port
```

```
  }
else
   forward ETH CI traffic unit to Data Port
endif
```

NOTE – Further filtering of OAM traffic units is performed by the OAM MEL filter process which forms part of the ETH adaptation functions specified in clause 9.3.

MIP OAM insertion process

The MIP OAM insertion process inserts OAM traffic units that are generated in the ETHDi_FT_Sk process into the stream of traffic units.

For all ETH_CI_D received on any but the data input port, the SA field is overwritten with the MI_MIP~~MEP~~_MAC value. In the M_SDU field the Ethertype value is overwritten with the OAM Ethertype value (89-02) and the MEL field is overwritten with the MI_MEL value.

This ensures that every generated OAM field has the correct SA, Ethertype and MEL.

•••

14)   Clause 9.2

The clause number is missing from the title of clause 9.2.

Edit the line before clause 9.2.1, "ETHx flow termination functions (ETHx_FT)" as follows:

<u>9.2</u>   ETH termination functions

ITU-T Y-SERIES RECOMMENDATIONS

GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-GENERATION NETWORKS

GLOBAL INFORMATION INFRASTRUCTURE	
General	Y.100–Y.199
Services, applications and middleware	Y.200–Y.299
Network aspects	Y.300–Y.399
Interfaces and protocols	Y.400–Y.499
Numbering, addressing and naming	Y.500–Y.599
Operation, administration and maintenance	Y.600–Y.699
Security	Y.700–Y.799
Performances	Y.800–Y.899
INTERNET PROTOCOL ASPECTS	
General	Y.1000–Y.1099
Services and applications	Y.1100–Y.1199
Architecture, access, network capabilities and resource management	Y.1200–Y.1299
Transport	**Y.1300–Y.1399**
Interworking	Y.1400–Y.1499
Quality of service and network performance	Y.1500–Y.1599
Signalling	Y.1600–Y.1699
Operation, administration and maintenance	Y.1700–Y.1799
Charging	Y.1800–Y.1899
IPTV over NGN	Y.1900–Y.1999
NEXT GENERATION NETWORKS	
Frameworks and functional architecture models	Y.2000–Y.2099
Quality of Service and performance	Y.2100–Y.2199
Service aspects: Service capabilities and service architecture	Y.2200–Y.2249
Service aspects: Interoperability of services and networks in NGN	Y.2250–Y.2299
Enhancements to NGN	Y.2300–Y.2399
Network management	Y.2400–Y.2499
Network control architectures and protocols	Y.2500–Y.2599
Packet-based Networks	Y.2600–Y.2699
Security	Y.2700–Y.2799
Generalized mobility	Y.2800–Y.2899
Carrier grade open environment	Y.2900–Y.2999
FUTURE NETWORKS	Y.3000–Y.3499
CLOUD COMPUTING	Y.3500–Y.3999

For further details, please refer to the list of ITU-T Recommendations.

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	**Transmission systems and media, digital systems and networks**
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Terminals and subjective and objective assessment methods
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	**Global information infrastructure, Internet protocol aspects and next-generation networks**
Series Z	Languages and general software aspects for telecommunication systems