International Telecommunication Union

ITU-T
TELECOMMUNICATION
STANDARDIZATION SECTOR
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G.8032/Y.1344
Corrigendum 1
(10/2010)

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

Ethernet ring protection switching

Corrigendum 1

Recommendation ITU-T G.8032/Y.1344 (2010) – Corrigendum 1

Recommendation ITU-T G.8032/Y.1344

Ethernet ring protection switching

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Summary

Corrigendum 1 to Recommendation ITU-T G.8032/Y.1344 clarifies clause 8, Ring protection conditions and commands, subclause 9.7.2, Ring interconnection model without R-APS virtual channel, clause 10.1, Principles of operations, subclause 10.1.4, Delay timers, subclause 10.1.5, Guard timer, subclause 10.1.8, Holdoff timer, subclause 10.1.9, Local priority logic, subclause 10.1.10, Flush logic, subclause 10.1.13, Backward compatibility logic, and Appendix VIII, Flush optimization.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.8032/Y.1344	2008-06-22	15
1.1	ITU-T G.8032/Y.1344 (2008) Amend. 1	2009-04-22	15
2.0	ITU-T G.8032/Y.1344	2010-03-09	15
2.1	ITU-T G.8032/Y.1344 (2010) Amend. 1	2010-06-11	15
2.2	ITU-T G.8032/Y.1344 (2010) Cor. 1	2010-10-07	15

FOREWORD

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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.

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As of the date of approval of this Recommendation, ITU had 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/.

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Ethernet ring protection switching

Corrigendum 1

1) Scope

Corrigendum 1 to Recommendation ITU-T G.8032/Y.1344 clarifies clause 8, Ring protection conditions and commands, subclause 9.7.2, Ring interconnection model without R-APS virtual channel, clause 10.1, Principles of operations, subclause 10.1.4, Delay timers, subclause 10.1.5, Guard timer, subclause 10.1.8, Holdoff timer, subclause 10.1.9, Local priority logic, subclause 10.1.10, Flush logic, subclause 10.1.13, Backward compatibility logic, and Appendix VIII, Flush optimization.

2) Changes to ITU-T G.8032/Y.1344

The following clauses and subclauses contain changes to be made to Recommendation ITU-T G.8032/Y.1344.

2.1) Corrections to all clauses and subclauses

Replace:

MI_RAPS_

by:

ETH_C_MI_RAPS_

2.2) Corrections to clause 8, Ring protection conditions and commands

Replace:

The following administrative commands are supported:

Forced switch (FS) – This command forces a block on the ring port where the command is issued.

Manual switch (MS) – In the absence of a failure or FS, this command forces a block on the ring port where the command is issued.

Clear – The Clear command is used for the following operations:

a)   Clearing an active local administrative command (e.g., forced switch or manual switch).

b)   Triggering reversion before the WTR or WTB timer expires in case of revertive operation.

c)   Triggering reversion in case of non-revertive operation.

by:

The following administrative commands are supported (as possible values for ETH_C_MI_RAPS_ExtCMD):

Forced switch (FS) – This command forces a block on the ring port where the command is issued.

Manual switch (MS) – In the absence of a failure or FS, this command forces a block on the ring port where the command is issued.

Clear – The Clear command, at the Ethernet ring node, is used for the following operations:

a)   Clearing an active local administrative command (e.g., forced switch or manual switch).

b)   Triggering reversion before the WTR or WTB timer expires in case of revertive operation.

c)   Triggering reversion in case of non-revertive operation.

2.3)   Corrections to subclause 9.7.2, Ring interconnection model without R-APS virtual channel

Add the following text between fifth and sixth paragraph:

In addition, in order to ensure correct operation of the FDB flush operation, there are changes to the operation of the flush logic (see subclause 10.1.10).

2.4   Corrections to clause 10.1, Principles of operations

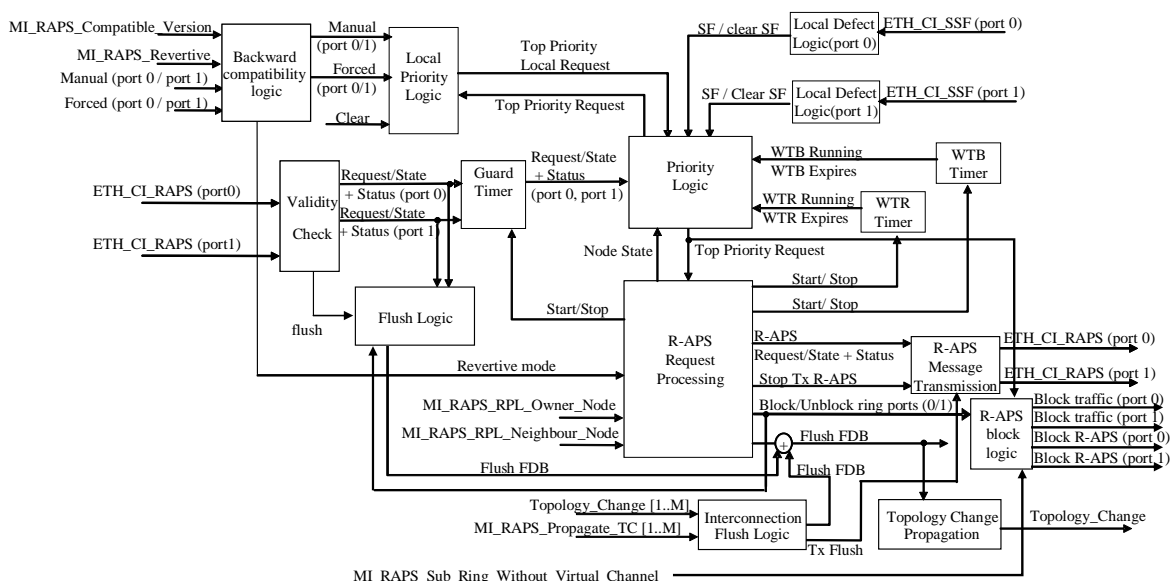*Replace the following old Figure 10-1:*

Figure 10-1 – Decomposition of ERP control process
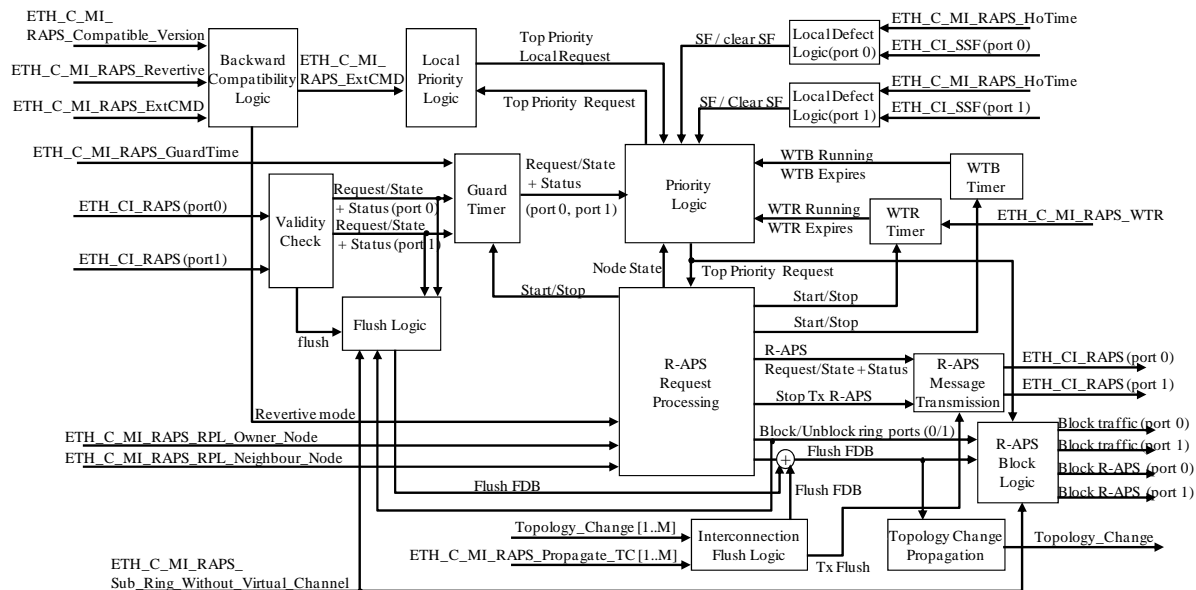
by the following new Figure 10-1:

Figure 10-1 – Decomposition of ERP control process

2.5)   Corrections to subclause 10.1.4, Delay timers

Replace:

a)   When recovering from a signal fail, the delay timer must be long enough to allow the recovering network to become stable. This delay timer, called the WTR timer, may be configured by the operator in 1 minute steps between 1 and 12 minutes; the default value being 5 minutes.

by:

a)   When recovering from a signal fail, the delay timer must be long enough to allow the recovering network to become stable. This delay timer, called the WTR timer, may be configured by the operator (via ETH_C_MI_RAPS_WTR) in 1 minute steps between 1 and 12 minutes; the default value being 5 minutes.

2.6)   Corrections to subclause 10.1.5, Guard timer

Replace:

The guard timer is activated whenever an Ethernet ring node receives an indication that a local switching request has cleared (i.e., local clear SF, Clear). The period of the guard timer may be configured by the operator in 10 ms steps between 10 ms and 2 seconds, with a default value of 500 ms. This timer period should be greater than the maximum expected forwarding delay in which an R-APS message traverses the entire ring. The longer the period of the guard timer, the longer an Ethernet ring node is unaware of new or existing relevant requests transmitted from other Ethernet ring nodes, and therefore unable to react to them.

By:

The guard timer is activated whenever an Ethernet ring node receives an indication that a local switching request has cleared (i.e., local clear SF, Clear). The period of the guard timer may be configured by the operator (via ETH_C_MI_RAPS_GuardTime) in 10 ms steps between 10 ms and 2 seconds, with a default value of 500 ms. This timer period should be greater than the maximum expected forwarding delay in which an R-APS message traverses the entire ring. The longer the

period of the guard timer, the longer an Ethernet ring node is unaware of new or existing relevant requests transmitted from other Ethernet ring nodes and therefore unable to react to them.

2.7) Corrections to subclause 10.1.8, Holdoff timer

Replace:

Each ERP control process should have a configurable holdoff timer. The suggested range of the holdoff timer is 0 to 10 seconds in steps of 100 ms with an accuracy of ±5 ms. The default value for holdoff timer is 0 seconds.

When a new defect or more severe defect occurs (new SF), this event is not reported immediately to protection switching if the provisioned holdoff timer value is non-zero. Instead, the holdoff timer is started. When the holdoff timer expires, the trail that started the timer is checked as to whether a defect still exists. If one does exist, that defect is reported to protection switching. The reported defect need not be the same one that started the timer.

By:

Each ERP control process should have a configurable holdoff timer (configurable via ETH_C_MI_RAPS_HoTime). The suggested range of the holdoff timer is 0 to 10 seconds in steps of 100 ms with an accuracy of ±5 ms. The default value for holdoff timer is 0 seconds.

When a new defect or more severe defect occurs (new SF), this event is not reported immediately to protection switching if the provisioned holdoff timer value is non-zero. Instead, the holdoff timer is started. When the holdoff timer expires, the trail that started the timer is checked as to whether a defect still exists. If one does exist, that defect is reported to protection switching. The reported defect need not be the same one that started the timer.

2.8) Corrections to subclause 10.1.9, Local priority logic

Replace:

Local priority logic evaluates the local operator commands according to the current top priority request. The commands Clear, manual switch and forced switch from the operator, are forwarded to the priority logic.

by:

Local priority logic evaluates the local operator commands (in ETH_C_MI_RAPS_ExtCMD) according to the current top priority request. The commands Clear, manual switch and forced switch from the operator, are forwarded to the priority logic.

2.9) Corrections to subclause 10.1.10, Flush logic

Change this subclause according to:

The flush logic retains for each ring port the information of node ID and blocked port reference (BPR) of the last R-APS message received over that ring port. As part of the initialization of the ERP control process, this information pair should be reset at both ring ports to the following values:

• Node ID: 00:00:00:00:00:00

• BPR: 0

For each new R-APS message received over one ring port, it extracts the (Node ID, BPR) pair and compares with the previous (Node ID, BPR) pair stored for that ring port. If it is different from the previous pair stored, then the previous pair is deleted and the newly received (Node ID, BPR) pair is stored for that ring port; and if it is different from the (Node ID, BPR) pair already stored at the other ring port, then a flush FDB action is triggered except when the new R-APS message has DNF or the receiving Ethernet ring node's node ID. An R-APS (NR) message received by this process

does not cause a flush FDB; however, it causes the deletion of the current (Node ID, BPR) pair on the receiving ring port. However, the received (Node ID, BPR) pair is not stored. When the ring port is changed to be blocked – as indicated by the block/unblock ring ports signal – the flush logic deletes the current (Node ID, BPR) pair on both ring ports.

For a sub-ring running in the without virtual channel model, the following procedure should be followed. For each new R-APS message received over one ring port, it extracts the (Node ID, BPR) pair and compares with the previous (Node ID, BPR) pair stored for that ring port. If it is different from the previous pair stored, then the previous pair is deleted and the newly received (Node ID, BPR) pair is stored for that ring port, and a flush FDB action is triggered, except when the new R-APS message has DNF. In addition, the (Node ID, BPR) pair stored at the other ring port is deleted. An R-APS (NR) message received by this process does not cause a Flush FDB; however it causes the deletion of the current (Node ID, BPR) pair on the receiving ring port. However, the received (Node ID, BPR) pair is not stored. When the ring port is changed to be blocked – as indicated by the block/unblock ring ports signal – the flush logic deletes the current (Node ID, BPR) pair on both ring ports.

The flush logic triggers a flush FDB action when it receives a flush indication from validity check.

2.10)   Corrections to subclause 10.1.13, Backward compatibility logic

Change this subclause according to:

Backward compatibility logic accepts as inputs ETH_C_MI_RAPS_Compatible_Version, ETH_C_MI_RAPS_Revertive, and ETH_C_MI_RAPS_ExtCMD, i.e., commands which are specific to this version of this Recommendation. If the ETH_C_MI_RAPS_Compatible_Version is set to the version number of this Recommendation, the inputs and commands are forwarded transparently. If the ETH_C_MI_RAPS_Compatible_Version is set to a previous version number than the version number of this Recommendation, then some inputs and commands may not be forwarded. The default value of the ETH_C_MI_RAPS_Revertive shall be true. When the ETH_C_MI_RAPS_Revertive is set to false, the Ethernet ring is operated in non-revertive mode.

a)   If the ETH_C_MI_RAPS_Compatible_Version is set to '1' then:

   1)   Manual switch and forced switch operator commands in ETH_C_MI_RAPS_ExtCMD are filtered, and are not passed to the local priority logic.

   2)   Revertive mode is set to the value true.

b)   If the ETH_C_MI_RAPS_Compatible_Version is set to '2' then:

   1)   Manual switch and forced switch operator commands in ETH_C_MI_RAPS_ExtCMD are forwarded to the local priority logic.

   2)   Revertive mode is set to the same value as the input ETH_C_MI_RAPS_Revertive.

c)   ETH_C_MI_RAPS_Compatible_Version accepts the values '1' and '2'. The default value of the   ETH_C_MI_RAPS_Compatible_Version   shall   be   '2'.   The ETH_C_MI_RAPS_Compatible_Version is set to '1' when an Ethernet ring node, supporting only functionalities of ITU-T G.8032-2008 and ITU-T G.8032 Amd.1-2010, exists on the same Ethernet ring.

2.11) Corrections to Appendix VIII, Flush optimization
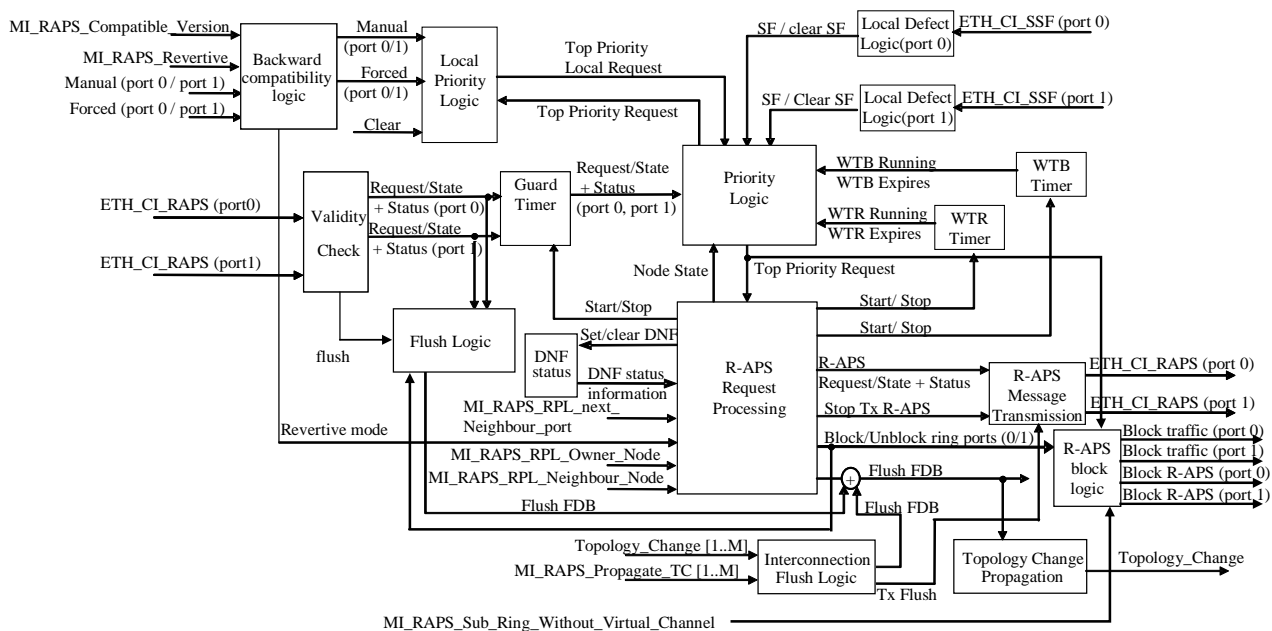
Replace the following old Figure VIII.4:

Figure VIII.4 – ERP control process model for flush optimization
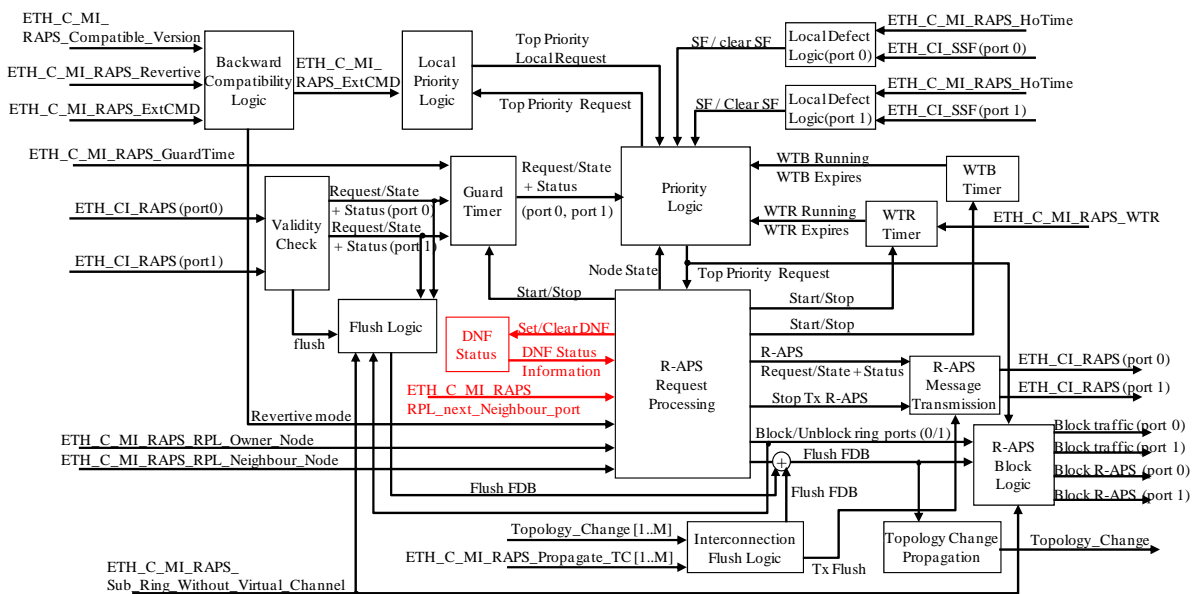
by the following new Figure VIII.4:

Figure VIII.4 – ERP control process model for flush optimization

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

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