

# IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)

IEEE Communications Society

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# **IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)**

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**Standards Development Board**  
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**IEEE Communications Society**

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**IEEE-SA Standards Board**

**Abstract:** The system-level requirements needed to ensure service-level, multi-vendor interoperability of Ethernet Passive Optical Network (EPON) equipment is described. The existing IEEE 802.3 and IEEE 802.1 standards, which ensure the interoperability at the Physical Layer (PHY) and Data Link Layer, are complemented by the specifications. Specifically included in this specification are

- EPON system-level interoperability specifications covering equipment functionality, traffic engineering, and service-level quality of service/class of service (QoS/CoS) mechanisms;
- Management specifications covering equipment management, service management, and EPON power-saving mechanism.

**Keywords:** 1G-EPON, 10G-EPON, EPON, Ethernet Passive Optical Network, IEEE 1904.1, interoperability, QoS, quality of service, service interoperability, SIEPON

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BBF TR-200, Using EPON in the Context of TR-101, L. D. Lamb and C. Shen, eds. Copyright © 2011, The Broadband Forum, Section 1.2, Figure 1, page 10.

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## Introduction

This introduction is not part of IEEE Std 1904.1-2017, IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON).

This standard builds upon the IEEE 802.3ah™ (1G-EPON) and IEEE 802.3av™ (10G-EPON) Physical Layer and Data Link Layer specifications and provides system-level and network-level definitions of numerous Ethernet Passive Optical Network (EPON) features, geared toward fostering interoperability between various implementations aiming to provide the same set of functionalities.<sup>a</sup> These Service Interoperability in Ethernet Passive Optical Networks (SIEPON) features allow “plug-and-play” interoperability of the transport, service, and control planes in a multi-vendor environment. This standard serves a number of important purposes:

- Compliant EPON devices follow a common specification for the worldwide market, potentially resulting in larger volumes and reduced costs.
- Operators may not face the challenge of developing system-level specifications and interoperability testing procedures before they can deploy EPON.
- EPON vendors may not need to implement multiple options to comply with multiple proprietary/national specifications. Reduced device complexity may further reduce cost.
- Competition among EPON equipment and component suppliers may increase, thus potentially driving further innovation and cost reductions.

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<sup>a</sup> Information on references can be found in Clause 2.

## Contents

1	Overview .....	1
1.1	Scope.....	1
1.2	Purpose.....	1
1.3	Coverage .....	1
1.4	Overview of clauses.....	2
2	Normative references.....	3
3	Definitions, acronyms, and abbreviations.....	6
3.1	Definitions.....	6
3.2	Acronyms and abbreviations.....	9
3.3	Special terms .....	14
3.4	Primitives in SIEPON .....	15
3.5	Notation for state diagrams .....	15
3.5.1	General conventions.....	15
3.5.1.1	Representation of states.....	16
3.5.1.2	Transitions.....	16
3.5.2	State diagrams and accompanying text.....	17
3.5.3	Actions inside state blocks.....	17
3.5.4	State diagram variables.....	17
3.5.5	Operators.....	17
3.5.6	Timers.....	18
3.5.7	Hexadecimal notation .....	18
3.5.8	Binary notation .....	18
3.6	Notation for PICS .....	18
3.6.1	Abbreviations and special symbols.....	19
3.6.2	Instructions for completing the PICS proforma.....	19
3.6.3	Additional information.....	20
3.6.4	Exception information .....	20
3.6.5	Conditional items .....	20
4	Specification packages.....	22
4.1	Introduction.....	22
4.2	SIEPON packages.....	22
4.3	Compliance with IEEE Std 802.3 .....	25
4.4	Extended OAM.....	25
5	Scope and architecture.....	26
5.1	Introduction.....	26
5.2	Coverage .....	26
5.3	EPON system architecture .....	26
5.3.1	Introduction.....	26
5.3.2	ODN.....	27
5.3.3	ONU architecture.....	28
5.3.3.1	L-ONU .....	28
5.3.3.2	C-ONU.....	30
5.3.3.3	S-ONU .....	30
5.3.4	OLT architecture.....	30
5.3.4.1	L-OLT .....	31
5.3.4.2	C-OLT.....	33
5.3.4.3	S-OLT .....	33
5.3.5	Interfaces.....	33
5.3.5.1	ONU_MDI.....	33
5.3.5.2	OLT_MDI.....	34

5.3.5.3	ONU_LI .....	34
5.3.5.4	OLT_LI .....	34
5.3.5.5	ONU_CI .....	34
5.3.5.6	OLT_CI .....	34
5.3.5.7	Internal Interfaces .....	35
6	MAC Client reference model .....	36
6.1	Introduction .....	36
6.2	MAC Client reference model definition .....	36
6.2.1	Reference model naming nomenclature .....	38
6.2.1.1	Functional blocks .....	38
6.2.1.2	Actionable entries .....	38
6.2.1.3	Functional elements .....	39
6.3	EPON Service Path definition .....	40
6.3.1	ESP examples .....	40
6.3.2	ESP_CTRL definition .....	42
6.3.2.1	ESP_VECTOR signal .....	42
6.3.2.2	ESP_COLOR signal .....	43
6.4	Frame flow through reference model .....	43
6.4.1	Frame flow through EPON OLT .....	44
6.4.1.1	Downstream frames through OLT .....	44
6.4.1.2	Upstream frames through OLT .....	45
6.4.2	Frame flow through EPON ONU .....	46
6.4.2.1	Downstream frames through ONU .....	46
6.4.2.2	Upstream frames through ONU .....	46
6.5	Blocks in the reference model .....	47
6.5.1	Input .....	47
6.5.2	Classifier .....	47
6.5.2.1	Classification element (rule) structure .....	48
6.5.2.1.1	Classification fields .....	49
6.5.2.1.1.1	Flexible access mechanism .....	52
6.5.2.1.2	Comparison operators .....	52
6.5.2.2	Classifier provisioning model and parameters .....	53
6.5.2.2.1	Default configuration .....	53
6.5.2.2.2	Adding one or more rules .....	53
6.5.2.2.3	Deleting one or more rules .....	54
6.5.2.2.4	Querying one or more rules .....	54
6.5.2.2.5	Clearing all rules .....	54
6.5.2.2.6	Learning function for the Classifier .....	55
6.5.2.2.7	Multicast forwarding table at the Classifier .....	55
6.5.3	Modifier .....	55
6.5.3.1	Modifier provisioning model and parameters .....	57
6.5.3.1.1	Default configuration .....	58
6.5.4	Policer/Shaper .....	58
6.5.4.1	Policer/Shaper actionable entry .....	59
6.5.4.2	Policer/Shaper functional elements .....	59
6.5.4.3	Policer/Shaper provisioning model and parameters .....	59
6.5.4.3.1	Default configuration .....	60
6.5.5	CrossConnect .....	60
6.5.6	Queues .....	61
6.5.6.1	Default configuration .....	61
6.5.7	Scheduler .....	62
6.5.8	Output .....	62
7	Connectivity configurations .....	64
7.1	Introduction .....	64

7.2	VLAN configurations .....	64
7.2.1	VLAN operations.....	64
7.2.1.1	Add Tag operation.....	65
7.2.1.1.1	Add C-Tag operation .....	65
7.2.1.1.2	Add S-Tag operation.....	66
7.2.1.1.3	Add VLAN0 operation .....	66
7.2.1.1.4	Add VLAN1 operation .....	67
7.2.1.2	Remove Tag operation .....	68
7.2.1.2.1	Remove C-Tag operation.....	68
7.2.1.2.2	Remove S-Tag operation .....	68
7.2.1.2.3	Remove VLAN0 operation .....	69
7.2.1.2.4	Remove VLAN1 operation .....	70
7.2.1.3	Replace Tag Field operation .....	71
7.2.1.3.1	Replace C-Tag operation .....	71
7.2.1.3.2	Replace S-Tag operation.....	72
7.2.1.3.3	Replace VLAN0 operation .....	73
7.2.1.3.4	Replace VLAN1 operation .....	73
7.2.1.4	Double-tagging operations .....	74
7.2.2	VLAN modes.....	74
7.2.2.1	Device-based VLAN modes.....	75
7.2.2.1.1	OLT Transparent VLAN mode.....	75
7.2.2.1.2	ONU Transparent VLAN mode.....	76
7.2.2.1.3	OLT Tagging VLAN mode .....	78
7.2.2.1.4	ONU Tagging VLAN mode.....	80
7.2.2.1.5	OLT Translation VLAN mode.....	82
7.2.2.1.6	ONU ToS/CoS Conversion VLAN mode.....	84
7.2.2.1.7	Default configuration.....	86
7.2.2.1.8	Device-based VLAN management .....	86
7.2.2.2	Port-based VLAN modes .....	86
7.2.2.2.1	Transparent VLAN mode .....	87
7.2.2.2.2	Tagging VLAN mode .....	88
7.2.2.2.3	Translation VLAN mode .....	90
7.2.2.2.4	Filtering VLAN mode.....	92
7.2.2.2.5	N:1 Aggregation VLAN mode.....	93
7.2.2.2.6	Default configuration.....	96
7.2.2.2.7	Port-based VLAN management.....	96
7.2.2.2.8	MAC aging function .....	97
7.2.2.3	Provider Bridging (PB) VLAN modes.....	97
7.2.2.3.1	Transport PB VLAN mode .....	98
7.2.2.3.2	Encapsulation PB VLAN mode .....	99
7.2.2.3.3	MAC-Source-Address-based admission control function.....	101
7.3	Tunneling configurations .....	101
7.3.1	Tunneling operations .....	101
7.3.1.1	Add Tag operation.....	101
7.3.1.1.1	Add I-Header operation .....	102
7.3.1.1.2	Add B-Tag operation .....	102
7.3.1.2	Remove Tag operation .....	103
7.3.1.2.1	Remove I-Header operation.....	103
7.3.1.2.2	Remove B-Tag operation.....	103
7.3.1.3	Replace Tag operation.....	104
7.3.1.3.1	Replace I-Header operation .....	104
7.3.1.3.2	Replace I-Tag operation.....	105
7.3.1.3.3	Replace B-Tag operation .....	105
7.3.1.4	Double-tagging operations .....	106
7.3.2	Tunneling modes.....	106
7.3.2.1	Transport mode .....	107

7.3.2.2	Encapsulation mode .....	109
7.4	Multicast configurations .....	111
7.4.1	Introduction.....	111
7.4.1.1	Multicast transport .....	113
7.4.1.1.1	Multicast ESP .....	113
7.4.1.1.2	1G-EPON/10G-EPON coexistence requirements.....	116
7.4.1.1.3	ONU-sourced multicast transport .....	117
7.4.2	Multicast based on VLAN and/or MAC group address.....	117
7.4.2.1	Operation outline.....	117
7.4.2.1.1	OLT-based multicast management .....	118
7.4.2.2	MLD-based multicast control.....	118
7.4.2.2.1	ONU requirements .....	118
7.4.2.2.2	OLT requirements.....	118
7.4.2.3	Multicast transport based on VLAN .....	119
7.4.2.3.1	OLT forwarding behavior .....	119
7.4.2.3.2	ONU forwarding behavior .....	121
7.4.2.4	Multicast transport based on MAC group address .....	121
7.4.2.4.1	Static MAC address registration .....	121
7.4.2.4.2	Dynamic MAC address registration.....	122
7.4.3	Multicast based on combined VLAN and group address with no authorization control.....	123
7.4.3.1	Operation outline.....	123
7.4.3.1.1	OLT operation.....	123
7.4.3.1.2	ONU operation.....	123
7.4.3.2	Multicast management and control .....	124
7.4.3.2.1	ONU requirements .....	124
7.4.3.2.2	OLT requirements.....	124
7.4.3.3	Multicast transport based on VLAN and MAC group address.....	124
7.4.3.3.1	OLT forwarding behavior .....	125
7.4.3.3.2	ONU forwarding behavior .....	125
7.4.3.4	Multicast transport based on VLAN and IP multicast address.....	126
7.4.3.4.1	OLT forwarding behavior.....	127
7.4.3.4.2	ONU forwarding behavior .....	128
7.4.4	Multicast based on combined VLAN and group address with authorization control.....	130
7.4.4.1	Operation outline.....	130
7.4.4.1.1	OLT operation.....	130
7.4.4.1.2	ONU operation.....	130
7.4.4.2	Multicast management and control .....	131
7.4.4.2.1	ONU requirements .....	131
7.4.4.2.2	OLT requirements.....	131
7.4.4.3	Multicast transport based on VLAN and MAC group address.....	132
7.4.4.3.1	OLT forwarding behavior .....	132
7.4.4.3.2	ONU forwarding behavior .....	132
7.4.4.4	Multicast transport based on VLAN and IP multicast address.....	132
7.4.4.4.1	OLT forwarding behavior .....	132
7.4.4.4.2	ONU forwarding behavior .....	133
7.4.4.5	Examples of multicast with authorization control.....	133
7.4.4.5.1	Multicast client prohibited from accessing multicast content .....	133
7.4.4.5.2	Multicast client permitted to access multicast content.....	133
7.4.4.5.3	Multicast client permitted to temporarily access multicast content .....	135
7.4.5	Multicast based on multicast LLID.....	137
7.4.5.1	Operation outline.....	137
7.4.5.2	IGMP-based and MLD-based multicast control.....	137
7.4.5.2.1	ONU requirements .....	137
7.4.5.2.2	OLT requirements.....	137
7.4.5.3	Provisioning of multicast forwarding.....	138
7.4.5.3.1	Provisioning of inter-ONU multicast based on mLLID.....	139

7.4.5.3.2	Provisioning of intra-ONU multicast using port-based multicast group control.....	139
7.4.5.3.3	Provisioning of intra-ONU multicast using MAC-based multicast group control.....	140
7.4.5.4	Multicast forwarding based on mLLID and IP group address .....	140
7.4.5.4.1	OLT forwarding behavior.....	140
7.4.5.4.2	ONU forwarding behavior.....	142
8	Service performance and QoS guarantees .....	146
8.1	Introduction.....	146
8.2	Traffic types and services .....	146
8.2.1	Real-time flows with periodic fixed-size data frames.....	146
8.2.1.1	Circuit emulation service .....	146
8.2.1.2	Mobile backhaul service.....	146
8.2.2	Real-time flows with variable-size data frames or with periodic inactivity.....	146
8.2.2.1	VoIP service.....	147
8.2.2.2	IPTV service .....	147
8.2.3	Non-real-time flows that require throughput/frame loss guarantees.....	147
8.2.3.1	Guaranteed data service .....	147
8.2.4	Non-real-time, non-guaranteed flows .....	147
8.2.4.1	Best effort service .....	147
8.3	QoS parameters and metrics.....	147
8.3.1	Committed Information Rate and Committed Burst Size parameters.....	148
8.3.2	Excess Information Rate and Excess Burst Size parameters .....	148
8.3.2.1	Excess Information Rate Weight parameter.....	148
8.3.3	Peak Information Rate and Peak Burst Size parameters .....	149
8.3.4	Bandwidth assignment methodologies.....	149
8.3.5	Frame delay.....	150
8.3.6	Frame Delay Variation (FDV).....	151
8.3.7	Frame Loss Ratio (FLR) .....	151
8.4	QoS mechanisms and configurations .....	152
8.4.1	Configuration supporting DPoE QoS model.....	152
8.4.1.1	Queue service discipline.....	152
8.4.1.2	Report queue length calculation.....	152
8.4.1.3	<i>REPORT</i> MPCPDU format.....	156
8.4.1.3.1	Number of Queue Sets.....	156
8.4.1.3.2	Number of queues per Queue Set .....	156
8.4.1.3.3	Queue #n Report.....	157
8.4.1.3.4	Ordering of Queue #n Reports across multiple Queue Sets.....	157
8.4.2	Configuration supporting dedicated thresholds.....	157
8.4.2.1	Queue service discipline.....	157
8.4.2.2	Report queue length calculation.....	158
8.4.2.3	<i>REPORT</i> MPCPDU format with dedicated thresholds .....	160
8.4.2.3.1	Queue #n Report .....	161
8.4.2.3.2	Maximum value of the Queue #n Report.....	162
8.4.2.3.3	Ordering of Queue #n Report across multiple Queue Sets .....	162
8.4.2.3.4	Interpretation of the last Queue Set.....	162
8.4.2.3.5	Number of queues per Queue Set .....	162
8.4.2.3.6	Number of Queue Sets .....	162
8.4.2.4	Queue management.....	163
8.4.3	Configuration supporting aggregated thresholds .....	163
8.4.3.1	Queue service discipline.....	163
8.4.3.2	Report queue length calculation.....	164
8.4.3.3	<i>REPORT</i> MPCPDU format with cumulative thresholds.....	166
8.4.3.3.1	Queue #n Report .....	167
8.4.3.3.2	Maximum value of the Queue #n Report.....	168
8.4.3.3.3	Ordering of Queue #n Report across multiple Queue Sets .....	168
8.4.3.3.4	Interpretation of the first or last Queue Set.....	168

8.4.3.3.5	Number of queues per Queue Set .....	168
8.4.3.3.6	Number of Queue Sets .....	169
8.4.3.4	Discovery and configuration of queue parameters .....	169
8.5	Performance monitoring and verification .....	170
8.5.1	General requirements .....	170
8.5.2	Management monitoring requirements .....	170
8.5.3	Performance monitoring parameters .....	171
9	Service availability .....	175
9.1	Device and transceiver status monitoring and diagnostic functions.....	175
9.1.1	Introduction.....	175
9.1.2	IEEE Std 802.3-defined monitoring parameters .....	175
9.1.2.1	Errored symbol period.....	175
9.1.2.2	Errored frames.....	175
9.1.2.3	Errored frame period .....	175
9.1.2.4	Errored frame seconds.....	176
9.1.2.5	1G-EPON corrected FEC block counter .....	176
9.1.2.6	1G-EPON uncorrected FEC block counter .....	176
9.1.2.7	10/1GBASE-PRX and 10GBASE-PR corrected FEC codewords counter .....	176
9.1.2.8	10/1GBASE-PRX and 10GBASE-PR uncorrected FEC codewords counter .....	176
9.1.3	Transceiver status monitoring for SFF-8472– and SFF-8077i–compliant DPoE devices .....	176
9.1.3.1	Optical transceiver temperature .....	177
9.1.3.2	Optical transceiver supply voltage .....	177
9.1.3.3	Optical transmitter bias current .....	177
9.1.3.4	Optical transmitter output power.....	177
9.1.3.5	Optical receiver input power .....	177
9.1.4	Transceiver status monitoring, with sampling time requirements.....	177
9.1.4.1	Management requirements for ONUs .....	177
9.1.4.2	Management requirements for OLTs .....	177
9.1.4.3	Measurement and monitoring requirements .....	178
9.1.4.4	Optical transceiver temperature .....	178
9.1.4.5	Optical transceiver supply voltage .....	178
9.1.4.6	Optical transmitter bias current .....	178
9.1.4.7	Optical transmitter output power.....	178
9.1.4.8	Optical receiver input power for ONUs .....	178
9.1.4.9	Optical receiver input power for OLTs .....	179
9.1.4.10	Minimum sampling time for OLTs .....	179
9.1.5	Transceiver status monitoring requirements .....	179
9.1.5.1	Management requirements .....	179
9.1.5.2	Measurement and monitoring requirements.....	179
9.1.5.3	Optical transceiver temperature .....	180
9.1.5.4	Optical transceiver supply voltage .....	180
9.1.5.5	Optical transmitter unit bias current.....	180
9.1.5.6	Optical transmitter output power.....	180
9.1.5.7	Optical receiver input power .....	180
9.1.6	Alarms and warnings associated with ONU transmitter status monitoring .....	180
9.1.7	Management for ONU alarms, warnings, and transceiver status .....	181
9.1.8	UNI port loop detection .....	181
9.1.8.1	Introduction.....	181
9.1.8.2	Functional requirements.....	182
9.1.8.3	Management and operational requirements.....	182
9.1.8.4	UNI-UNI loop conditions.....	183
9.1.9	Loopback function .....	183
9.2	Definitions of events .....	184
9.2.1	Introduction.....	184
9.2.2	Event-related management operations .....	184

9.2.2.1	Event set/clear .....	184
9.2.3	Events associated with the PON Port object .....	185
9.2.3.1	RXPowerAlarmH .....	186
9.2.3.2	RXPowerAlarmL .....	186
9.2.3.3	TXPowerAlarmH .....	186
9.2.3.4	TXPowerAlarmL .....	187
9.2.3.5	TXBiasAlarmH .....	187
9.2.3.6	TXBiasAlarmL .....	187
9.2.3.7	VccAlarmH .....	187
9.2.3.8	VccAlarmL .....	187
9.2.3.9	TempAlarmH .....	187
9.2.3.10	TempAlarmL .....	187
9.2.3.11	RXPowerWarningH .....	187
9.2.3.12	RXPowerWarningL .....	187
9.2.3.13	TXPowerWarningH .....	188
9.2.3.14	TXPowerWarningL .....	188
9.2.3.15	TXBiasWarningH .....	188
9.2.3.16	TXBiasWarningL .....	188
9.2.3.17	VccWarningH .....	188
9.2.3.18	VccWarningL .....	188
9.2.3.19	TempWarningH .....	188
9.2.3.20	TempWarningL .....	188
9.2.3.21	DownstreamDropEventsAlarm .....	188
9.2.3.22	UpstreamDropEventsAlarm .....	189
9.2.3.23	DownstreamCRCErrorFramesAlarm .....	189
9.2.3.24	UpstreamCRCErrorFramesAlarm .....	189
9.2.3.25	DownstreamOversizeFrameAlarm .....	189
9.2.3.26	UpstreamOversizeFrameAlarm .....	189
9.2.3.27	DownstreamDiscardsAlarm .....	189
9.2.3.28	UpstreamDiscardsAlarm .....	189
9.2.3.29	DownstreamErrorsAlarm .....	189
9.2.3.30	UpstreamErrorsAlarm .....	189
9.2.3.31	DownstreamDropEventsWarning .....	190
9.2.3.32	UpstreamDropEventsWarning .....	190
9.2.3.33	DownstreamCRCErrorFramesWarning .....	190
9.2.3.34	UpstreamCRCErrorFramesWarning .....	190
9.2.3.35	DownstreamOversizeFramesWarning .....	190
9.2.3.36	UpstreamOversizeFramesWarning .....	190
9.2.3.37	DownstreamDiscardsWarning .....	190
9.2.3.38	UpstreamDiscardsWarning .....	190
9.2.3.39	DownstreamErrorsWarning .....	190
9.2.3.40	UpstreamErrorsWarning .....	191
9.2.4	Events associated with the ONU object .....	191
9.2.4.1	EquipmentAlarm .....	191
9.2.4.2	PowerAlarm .....	191
9.2.4.3	BatteryMissing .....	192
9.2.4.4	BatteryFailure .....	192
9.2.4.5	BatteryVoltLow .....	192
9.2.4.6	IntrusionAlarm .....	192
9.2.4.7	SelfTestFailure .....	192
9.2.4.8	ONUTempHighAlarm and ONUTempLowAlarm .....	192
9.2.4.9	PON_IF_Switch .....	193
9.2.4.10	SleepStatusUpdate .....	193
9.2.4.11	ActivationSuccessEvent .....	193
9.2.4.12	ActivationFailureEvent .....	193
9.2.5	Events associated with the UNI Port object .....	193

9.2.5.1	EthPortAutoNegFailure.....	194
9.2.5.2	EthPortLOS.....	194
9.2.5.3	EthPortConnectionFailure.....	195
9.2.5.4	EthPortLoopback.....	195
9.2.5.5	EthPortCongestion.....	195
9.2.5.6	DownstreamDropEventsAlarm.....	195
9.2.5.7	UpstreamDropEventsAlarm.....	195
9.2.5.8	DownstreamCRCErrorFramesAlarm.....	195
9.2.5.9	UpstreamCRCErrorFramesAlarm.....	195
9.2.5.10	DownstreamUndersizeFramesAlarm.....	195
9.2.5.11	UpstreamUndersizeFramesAlarm.....	195
9.2.5.12	DownstreamOversizeFrameAlarm.....	195
9.2.5.13	UpstreamOversizeFrameAlarm.....	196
9.2.5.14	DownstreamFragmentsAlarm.....	196
9.2.5.15	UpstreamFragmentsAlarm.....	196
9.2.5.16	DownstreamJabbersAlarm.....	196
9.2.5.17	UpstreamJabbersAlarm.....	196
9.2.5.18	DownstreamDiscardsAlarm.....	196
9.2.5.19	UpstreamDiscardsAlarm.....	196
9.2.5.20	DownstreamErrorsAlarm.....	196
9.2.5.21	UpstreamErrorsAlarm.....	196
9.2.5.22	StatusChangeTimesAlarm.....	197
9.2.5.23	DownstreamDropEventsWarning.....	197
9.2.5.24	UpstreamDropEventsWarning.....	197
9.2.5.25	DownstreamCRCErrorFramesWarning.....	197
9.2.5.26	UpstreamCRCErrorFramesWarning.....	197
9.2.5.27	DownstreamUndersizeFramesWarning.....	197
9.2.5.28	UpstreamUndersizeFramesWarning.....	197
9.2.5.29	DownstreamOversizeFramesWarning.....	197
9.2.5.30	UpstreamOversizeFramesWarning.....	197
9.2.5.31	DownstreamFragmentsWarning.....	198
9.2.5.32	UpstreamFragmentsWarning.....	198
9.2.5.33	DownstreamJabbersWarning.....	198
9.2.5.34	UpstreamJabbersWarning.....	198
9.2.5.35	DownstreamDiscardsWarning.....	198
9.2.5.36	UpstreamDiscardsWarning.....	198
9.2.5.37	DownstreamErrorsWarning.....	198
9.2.5.38	UpstreamErrorsWarning.....	198
9.2.5.39	StatusChangeTimesWarning.....	198
9.2.6	Events defined in IEEE Std 802.3, Clause 57.....	199
9.2.6.1	Downstream link fault.....	199
9.2.6.2	Upstream link fault.....	199
9.2.6.3	Dying Gasp.....	199
9.2.6.4	ONU critical event.....	199
9.2.6.5	OLT critical event.....	200
9.2.7	Event definitions derived from ITU-T G.984.3.....	200
9.2.7.1	Downstream Signal Failure (SF-D) alarm.....	200
9.2.7.2	Upstream Signal Failure (SF-U) alarm.....	200
9.2.7.3	Downstream Signal Degradation (SD-D) alarm.....	200
9.2.7.4	Upstream Signal Degradation (SD-U) alarm.....	201
9.2.7.5	Configuring errored frame event parameters.....	201
9.2.7.6	Alarm setting and clearing process.....	201
9.2.7.6.1	Variables.....	201
9.2.7.6.2	Timers.....	202
9.2.7.6.3	Primitives.....	202
9.2.7.6.4	State diagrams.....	203

9.2.8	Loss of service .....	204
9.3	Optical link protection .....	204
9.3.1	Introduction.....	204
9.3.1.1	Terminology.....	204
9.3.2	Device architecture and requirements.....	205
9.3.2.1	Line and Client protection.....	205
9.3.2.1.1	Line device protection.....	206
9.3.2.1.2	Client device protection .....	206
9.3.2.2	Line fault detection .....	207
9.3.2.2.1	OLT detection conditions .....	207
9.3.2.2.2	ONU detection conditions.....	207
9.3.3	Trunk protection scheme.....	208
9.3.3.1	Functional requirements.....	209
9.3.3.2	C-OLT requirements .....	210
9.3.3.3	C-ONU requirements .....	211
9.3.3.4	Trunk switching process .....	211
9.3.3.4.1	Variables .....	211
9.3.3.4.2	Timers .....	212
9.3.3.4.3	Functions.....	212
9.3.3.4.4	Primitives.....	213
9.3.3.4.5	State diagrams.....	213
9.3.4	Tree protection scheme.....	215
9.3.4.1	Functional requirements.....	216
9.3.4.2	C-OLT requirements .....	217
9.3.4.3	C-ONU requirements .....	218
9.3.4.4	Examples of tree protection switching .....	219
9.3.4.4.1	NMS-driven tree line switchover event .....	219
9.3.4.4.2	Automated tree line switching with line failure detection .....	220
9.3.4.4.3	Automated tree line switching with upstream line failure detection .....	220
9.3.4.4.4	Automated tree line switching with downstream line failure detection .....	221
9.3.4.5	Tree protection process .....	222
9.3.4.5.1	Constants.....	222
9.3.4.5.2	Variables.....	223
9.3.4.5.3	Functions.....	224
9.3.4.5.4	Primitives.....	224
9.3.4.5.5	State diagrams.....	225
9.3.5	Profile-specific messages.....	227
9.3.5.1	Messages for non-SNMP-optimized eOAM profile.....	227
9.3.5.1.1	ONU Capability Discovery.....	228
9.3.5.1.2	Configuration of line fault detection parameters.....	228
9.3.5.1.3	Configuration of hold-over interval .....	228
9.3.5.1.4	Primitives used in tree protection state diagram .....	228
9.3.5.2	Messages for DPoE eOAM profile .....	229
9.3.5.2.1	ONU capability discovery.....	230
9.3.5.2.2	Configuration of line fault detection parameters.....	230
9.3.5.2.3	Configuration of hold-over interval .....	230
9.3.5.2.4	Primitives used in tree protection state diagram .....	230
9.3.6	Trunk protection scheme with explicit messaging.....	231
9.3.6.1	Functional requirements.....	232
9.3.6.2	<i>HOLDOVER</i> message for trunk protection scheme .....	232
9.3.6.3	Examples of trunk protection switching.....	232
9.3.6.3.1	Automated trunk protection switching.....	232
9.3.6.3.2	NMS-driven trunk protection switching .....	232
9.3.6.4	C-OLT requirements .....	234
9.3.6.5	C-ONU requirements .....	234
9.3.6.6	Configuration messages .....	235

9.3.6.7	Trunk switching process .....	235
9.3.6.7.1	Primitives .....	235
9.3.6.7.2	State diagrams .....	235
9.4	Remote ONU transmitter power supply control function .....	237
9.4.1	Introduction.....	237
9.4.2	Remote ONU transmitter power supply control function .....	237
9.4.2.1	OLT requirements .....	237
9.4.2.2	ONU requirements .....	238
9.4.2.3	Coexistence requirements .....	238
10	Power saving.....	239
10.1	Introduction.....	239
10.1.1	Terminology.....	239
10.2	Objectives of power saving in EPON .....	240
10.3	Scope of power-saving specifications for EPON .....	240
10.4	EPON service and power-saving management requirements.....	241
10.4.1	EPON compliance requirements.....	241
10.4.2	EPON service requirements.....	241
10.4.3	Timing requirements.....	241
10.4.4	EPON power-saving management requirements .....	242
10.5	Active mechanisms of power saving for EPON.....	242
10.5.1	Introduction.....	242
10.5.2	OLT-driven power-saving mechanism .....	242
10.5.2.1	Introduction.....	242
10.5.2.2	EPON system-level requirements .....	242
10.5.2.3	ONU requirements .....	243
10.5.2.4	OLT requirements .....	243
10.5.2.5	Power-saving mechanism.....	244
10.5.2.5.1	Signaling protocol.....	244
10.5.2.5.2	Initiation stage.....	244
10.5.2.5.3	Early wake-up .....	245
10.5.2.5.4	Synchronized wake-up.....	246
10.5.2.5.5	State diagrams and variable definitions .....	247
10.5.2.5.5.1	Variables .....	247
10.5.2.5.5.2	Timers .....	248
10.5.2.5.5.3	Functions.....	249
10.5.2.5.5.4	Primitives .....	249
10.5.2.5.5.5	State diagrams .....	251
10.5.3	Power-saving mechanism with support for ONU initiation/response.....	252
10.5.3.1	Introduction.....	252
10.5.3.2	EPON system-level requirements .....	252
10.5.3.2.1	Sleep modes .....	252
10.5.3.3	Power-saving mechanism.....	253
10.5.3.3.1	Signaling protocol.....	253
10.5.3.3.2	Initiation stage.....	253
10.5.3.3.2.1	OLT-initiated power-saving mode .....	254
10.5.3.3.2.2	ONU-initiated power-saving mode .....	254
10.5.3.3.3	Termination stage .....	254
10.5.3.3.4	Early wake-up .....	255
10.5.3.3.5	Active mode resync wake-up mechanism.....	256
10.5.3.3.6	State diagrams and variables definitions.....	257
10.5.3.3.6.1	Variables .....	257
10.5.3.3.6.2	Timers .....	261
10.5.3.3.6.3	Functions.....	261
10.5.3.3.6.4	State diagrams .....	261
10.5.3.4	Management based on Extension MAC Control frames.....	264

10.5.3.4.1	Extension MAC Control frame structure for power saving .....	264
10.5.3.4.2	Extension MAC Control frame types for power saving.....	264
10.5.3.4.2.1	Extension MAC Control frame type codes for power saving.....	264
10.5.3.4.2.2	<i>SLEEP_ALLOW</i> message.....	264
10.5.3.4.2.3	<i>SLEEP_ACK</i> message.....	265
10.5.3.4.2.4	<i>SLEEP_INDICATION</i> message .....	265
10.5.4	OLT-driven power-saving mechanism with multiple sleep periods .....	266
10.5.4.1	Functional requirements.....	266
10.5.4.2	EPON compliance requirements .....	266
10.5.4.3	EPON system-level requirements .....	266
10.5.4.4	ONU requirements .....	267
10.5.4.5	OLT requirements .....	268
10.5.4.6	Power-saving mechanism.....	268
10.5.4.6.1	Signaling protocol.....	268
10.5.4.6.2	Initiation stage.....	268
10.5.4.6.3	Early wake-up.....	269
10.5.4.6.4	Synchronized wake-up.....	269
10.5.4.6.5	Refresh mechanism.....	270
10.5.4.6.6	State diagrams and variable definitions .....	270
10.5.4.6.6.1	Variables .....	270
10.5.4.6.6.2	Timers .....	272
10.5.4.6.6.3	Functions.....	272
10.5.4.6.6.4	Primitives .....	272
10.5.4.6.6.5	State diagrams .....	274
11	Security-oriented mechanisms .....	277
11.1	Introduction.....	277
11.2	Data encryption and integrity protection.....	277
11.2.1	Introduction.....	277
11.2.2	Data encryption in DPoE .....	277
11.2.3	IEEE 802.1AE data encryption.....	277
11.2.3.1	Ciphersuite .....	277
11.3	ONU authentication and secure provisioning .....	277
11.3.1	Introduction.....	277
11.3.2	MAC-address-based, Logical-ID-based, and hybrid authentication .....	277
11.3.2.1	Introduction.....	277
11.3.2.2	Scope.....	278
11.3.2.3	Threat model .....	278
11.3.2.4	Authentication mechanisms .....	278
11.3.2.4.1	Requirements .....	278
11.3.2.4.2	Operation of the OLT authentication function.....	279
11.3.2.4.3	MAC-address-based authentication .....	279
11.3.2.4.4	Logical-ID-based authentication.....	281
11.3.2.4.5	Hybrid authentication.....	283
11.3.2.4.6	Registration deference mechanism .....	283
11.3.2.4.7	Authentication state diagrams.....	284
11.3.2.4.7.1	Constants.....	284
11.3.2.4.7.2	Variables .....	284
11.3.2.4.7.3	Timers .....	285
11.3.2.4.7.4	Functions.....	285
11.3.2.4.7.5	Primitives .....	286
11.3.2.4.7.6	State diagrams .....	289
11.3.3	ONU authentication in DPoE.....	293
11.3.4	IEEE 802.1X ONU authentication.....	293
11.3.4.1	IEEE 802.1X authentication in EPON .....	293
11.3.4.1.1	Control frame flow to/from the Authentication agent.....	294

11.3.4.1.2	Control of user traffic according to authentication state .....	294
11.3.4.2	Authentication mechanisms .....	295
11.3.4.2.1	IEEE Std 802.1X-2004 and EAP-MD5 .....	295
11.3.4.2.1.1	EAP framing and method.....	296
11.3.4.2.1.2	Authentication sequence .....	296
11.3.4.2.2	IEEE Std 802.1X-2010 and EAP-GPSK.....	296
11.3.4.2.2.1	EAP framing and method.....	297
11.3.4.2.2.2	Use of EAP-GPSK .....	297
12	Discovery and maintenance .....	298
12.1	Introduction.....	298
12.2	Device discovery and capability discovery .....	298
12.2.1	Non-SNMP-optimized eOAM management.....	298
12.2.1.1	MPCP/OAM discovery process .....	298
12.2.1.2	eOAM discovery process .....	298
12.2.1.2.1	Ordering of <i>Organization Specific Information</i> TLVs.....	299
12.2.1.2.1.1	Source OAM Client requirements.....	299
12.2.1.2.1.2	Destination OAM Client requirements.....	299
12.2.1.2.2	Message flow during eOAM discovery process .....	299
12.2.1.2.2.1	Constants.....	300
12.2.1.2.2.2	Variables .....	301
12.2.1.2.2.3	Timers .....	302
12.2.1.2.2.4	Functions.....	302
12.2.1.2.2.5	Primitives .....	302
12.2.1.2.2.6	State diagrams .....	305
12.2.1.3	OAM and eOAM keep-alive process .....	306
12.2.1.4	Client ONUs with multiple Line ONUs.....	306
12.2.1.4.1	Introduction.....	306
12.2.1.4.2	OLT-initiated mL-ONU discovery and registration.....	307
12.2.1.4.3	Initialization and mode-negotiation: detailed requirements .....	308
12.2.2	SNMP-optimized eOAM management.....	310
12.2.2.1	MPCP/OAM discovery process .....	310
12.2.2.2	eOAM discovery process .....	311
12.2.3	DPoE eOAM management .....	312
12.2.3.1	MPCP/OAM discovery process .....	312
12.2.3.2	eOAM discovery process .....	312
12.2.3.2.1	Requirements .....	312
12.2.3.2.2	Ordering of <i>Organization Specific Information</i> TLVs.....	313
12.2.3.2.2.1	Source OAM Client requirements.....	313
12.2.3.2.2.2	Destination OAM Client requirements.....	313
12.2.3.2.3	Message flow during eOAM discovery process .....	313
12.2.3.3	OAM and eOAM keep-alive process .....	314
12.3	Software updates.....	314
12.3.1	Software upgrade using non-SNMP-optimized eOAM mechanism .....	314
12.3.1.1	Software upgrade process.....	315
12.3.1.2	Software download process.....	315
12.3.1.2.1	Software image transfer modes.....	315
12.3.1.2.2	Software image download process.....	316
12.3.1.2.2.1	Software image download initiation.....	317
12.3.1.2.2.2	Software image download.....	317
12.3.1.2.2.3	Software image verification .....	317
12.3.1.3	Software image activation process .....	318
12.3.1.4	Software image committing process .....	318
12.3.1.5	Boot Loader process.....	319
12.3.1.6	State diagrams .....	320
12.3.1.6.1	Constants.....	320

12.3.1.6.2	Variables .....	321
12.3.1.6.3	Timers .....	323
12.3.1.6.4	Functions.....	324
12.3.1.6.5	Primitives .....	327
12.3.1.6.6	State diagrams .....	335
12.3.2	Software upgrade using SNMP-optimized eOAM management .....	340
12.3.2.1	Software upgrade types .....	340
12.3.2.2	Software upgrade procedure.....	341
12.3.2.2.1	Push-type upgrade.....	341
12.3.2.2.2	Pull-type upgrade .....	342
12.3.3	Software upgrade using DPoE eOAM management.....	344
12.3.3.1	Software image download process .....	345
12.3.3.1.1	Download initiation step.....	347
12.3.3.1.2	Download step .....	347
12.3.3.1.3	Verification step.....	348
12.3.3.1.4	Committing step.....	348
12.3.3.2	State diagrams .....	349
12.3.3.2.1	Constants.....	349
12.3.3.2.2	Variables .....	350
12.3.3.2.3	Timers .....	352
12.3.3.2.4	Functions.....	352
12.3.3.2.5	Primitives .....	353
12.3.3.2.6	State diagrams.....	356
13	Extended OAM for EPON.....	359
13.1	Profile-independent eOAM management.....	359
13.1.1	Requirements .....	359
13.1.1.1	Functional requirements.....	359
13.1.1.2	Frame size requirements.....	359
13.1.1.3	Frame rate requirements.....	359
13.1.1.4	eOAMPDU structure.....	359
13.2	Non-SNMP-optimized eOAM management.....	359
13.2.1	Timing requirements.....	359
13.2.2	eOAMPDU structure .....	360
13.2.2.1	eOAMPDU frame format.....	360
13.2.2.2	TLV-oriented structure.....	361
13.2.2.2.1	Variable Descriptor TLV .....	361
13.2.2.2.2	Variable Container TLV .....	362
13.2.2.3	TLVs for 802.3 OAMPDUs.....	363
13.2.2.3.1	<i>Extended Information</i> TLV .....	363
13.2.2.3.2	<i>Event Notification</i> TLV.....	364
13.2.3	eOAMPDU .....	367
13.2.3.1	eOAMPDU codes.....	367
13.2.3.2	<i>eOAM_Get_Request</i> eOAMPDU .....	367
13.2.3.3	<i>eOAM_Get_Response</i> eOAMPDU.....	368
13.2.3.4	<i>eOAM_Set_Request</i> eOAMPDU.....	369
13.2.3.5	<i>eOAM_Set_Response</i> eOAMPDU .....	370
13.2.3.6	<i>eOAM_Authentication</i> eOAMPDU.....	370
13.2.3.6.1	<i>eOAM_Authentication_Request</i> eOAMPDU .....	371
13.2.3.6.2	<i>eOAM_Authentication_Response</i> eOAMPDU.....	372
13.2.3.6.3	<i>eOAM_Authentication_Success</i> eOAMPDU .....	372
13.2.3.6.4	<i>eOAM_Authentication_Failure</i> eOAMPDU.....	373
13.2.3.7	<i>eOAM_Software</i> eOAMPDU .....	373
13.2.3.7.1	<i>eOAM_Software_FileWriteRequest</i> eOAMPDU .....	375
13.2.3.7.2	<i>eOAM_Software_FileTransferData</i> eOAMPDU.....	375
13.2.3.7.3	<i>eOAM_Software_FileTransferACK</i> eOAMPDU .....	376

13.2.3.7.4	<i>eOAM_Software_FileTransferError</i> eOAMPDU.....	377
13.2.3.7.5	<i>eOAM_Software_EndDownloadRequest</i> eOAMPDU .....	378
13.2.3.7.6	<i>eOAM_Software_EndDownloadResponse</i> eOAMPDU .....	378
13.2.3.7.7	<i>eOAM_Software_ActivateImageRequest</i> eOAMPDU .....	379
13.2.3.7.8	<i>eOAM_Software_ActivateImageResponse</i> eOAMPDU .....	380
13.2.3.7.9	<i>eOAM_Software_CommitImageRequest</i> eOAMPDU.....	381
13.2.3.7.10	<i>eOAM_Software_CommitImageResponse</i> eOAMPDU .....	382
13.2.3.8	<i>eOAM_QueueConfig</i> eOAMPDU .....	382
13.2.3.8.1	<i>eOAM_QueueThreshold_Get</i> eOAMPDU.....	383
13.2.3.8.2	<i>eOAM_QueueThreshold_Info</i> eOAMPDU .....	384
13.2.3.8.3	<i>eOAM_QueueThreshold_Set</i> eOAMPDU.....	385
13.2.3.8.4	<i>eOAM_QueueThreshold_ACK</i> eOAMPDU.....	386
13.2.3.9	<i>eOAM_Event</i> eOAMPDU .....	387
13.2.3.9.1	<i>eOAM_EventStatus_Request</i> eOAMPDU.....	388
13.2.3.9.2	<i>eOAM_EventStatus_Set</i> eOAMPDU .....	389
13.2.3.9.3	<i>eOAM_EventStatus_Response</i> eOAMPDU .....	390
13.2.3.9.4	<i>eOAM_EventThreshold_Request</i> eOAMPDU .....	391
13.2.3.9.5	<i>eOAM_EventThreshold_Set</i> eOAMPDU .....	392
13.2.3.9.6	<i>eOAM_EventThreshold_Response</i> eOAMPDU.....	393
13.2.4	eOAMPDU return codes.....	394
13.3	SNMP-optimized eOAM management .....	395
13.3.1	eOAMPDU structure .....	395
13.3.1.1	eOAMPDU frame format.....	395
13.3.1.2	PDU type.....	396
13.3.1.3	RequestId .....	397
13.3.1.4	ErrorStatus .....	397
13.3.1.5	TLV-oriented structure.....	398
13.3.1.5.1	Variable Descriptor TLV .....	398
13.3.1.5.2	Variable Container TLV .....	398
13.3.2	eOAM sequences .....	399
13.3.3	eOAMPDU .....	401
13.3.3.1	<i>GetRequest</i> eOAMPDU .....	401
13.3.3.2	<i>GetResponse</i> eOAMPDU.....	401
13.3.3.3	<i>SetRequest</i> eOAMPDU .....	402
13.3.3.4	<i>SetResponse</i> eOAMPDU.....	403
13.3.3.5	<i>UserDatagram</i> eOAMPDU.....	404
13.3.3.5.1	TFTP packet format.....	405
13.3.3.6	<i>QueueConfig</i> eOAMPDU .....	406
13.3.3.6.1	<i>ReportParameter_Get</i> eOAMPDU.....	406
13.3.3.6.2	<i>ReportParameter_Info</i> eOAMPDU .....	407
13.3.3.6.3	<i>ReportParameter_Set</i> eOAMPDU.....	409
13.3.3.6.4	<i>ReportParameter_ACK</i> eOAMPDU.....	410
13.3.3.6.5	<i>QueueThreshold_Get</i> eOAMPDU .....	411
13.3.3.6.6	<i>QueueThreshold_Info</i> eOAMPDU .....	412
13.3.3.6.7	<i>QueueThreshold_Set</i> eOAMPDU.....	414
13.3.3.6.8	<i>QueueThreshold_ACK</i> eOAMPDU .....	417
13.3.3.7	<i>OnuMIB</i> eOAMPDU.....	419
13.3.3.8	<i>DefaultFilter</i> eOAMPDU.....	420
13.3.3.8.1	<i>DefaultFilter_Get</i> eOAMPDU.....	421
13.3.3.8.2	<i>DefaultFilter_Info</i> eOAMPDU .....	421
13.3.3.8.3	<i>DefaultFilter_Set</i> eOAMPDU.....	422
13.3.3.8.4	<i>DefaultFilter_Ack</i> eOAMPDU .....	423
13.3.4	eOAMPDU return codes.....	424
13.4	DPoE eOAM management.....	425
13.4.1	eOAMPDU structure .....	425
13.4.1.1	eOAMPDU frame format.....	425

13.4.1.2	TLV-oriented structure.....	426
13.4.1.2.1	Variable Descriptor TLV .....	426
13.4.1.2.2	Variable Container TLV .....	426
13.4.1.2.3	TLVs carrying large values.....	428
13.4.1.3	TLVs for 802.3 OAMPDU.....	428
13.4.1.3.1	<i>Extended Information</i> TLV .....	428
13.4.1.3.2	<i>Event Notification</i> TLV.....	429
13.4.1.3.2.1	LoS (0x11) .....	431
13.4.1.3.2.2	Key Exchange Failure (0x12) .....	431
13.4.1.3.2.3	Port Disabled (0x21) .....	431
13.4.1.3.2.4	Power Failure (0x41).....	431
13.4.1.3.2.5	Statistics Alarm (0x81) .....	432
13.4.1.3.2.6	ONU Busy (0x82) .....	432
13.4.1.3.2.7	MAC Table Overflow (0x83).....	432
13.4.1.4	Multipart eOAMPDU response sequence .....	432
13.4.1.4.1.8	PON_IF_Switch (0x84) .....	433
13.4.2	eOAMPDU .....	433
13.4.2.1	eOAMPDU codes.....	433
13.4.2.2	<i>eOAM_Get_Request</i> eOAMPDU .....	434
13.4.2.3	<i>eOAM_Get_Response</i> eOAMPDU.....	434
13.4.2.4	<i>eOAM_Set_Request</i> eOAMPDU .....	435
13.4.2.5	<i>eOAM_Set_Response</i> eOAMPDU .....	436
13.4.2.6	<i>eOAM_Software</i> eOAMPDU .....	436
13.4.2.6.1	<i>eOAM_Software</i> eOAMPDU structure .....	436
13.4.2.6.2	<i>eOAM_Software_WriteRequest</i> eOAMPDU .....	438
13.4.2.6.3	<i>eOAM_Software_FileTransferData</i> eOAMPDU .....	438
13.4.2.6.4	<i>eOAM_Software_FileTransferAck</i> eOAMPDU .....	439
13.4.2.7	<i>eOAM_KeyExchange</i> eOAMPDU .....	440
13.4.2.7.1	<i>eOAM_KeyExchange</i> eOAMPDU structure .....	440
13.4.2.7.2	<i>eOAM_KeyExchange_Assign</i> eOAMPDU.....	441
13.4.2.7.3	<i>eOAM_KeyExchange_ACK</i> eOAMPDU .....	442
13.4.2.8	<i>eOAM_Early_WakeUpOLT</i> eOAMPDU .....	442
13.4.2.9	<i>eOAM_Early_WakeUpONU</i> eOAMPDU .....	443
13.4.2.10	<i>eOAM_Sleep_Allowed</i> eOAMPDU.....	443
13.4.3	eOAMPDU return codes.....	443
13.4.4	Timing requirements.....	444
14	Management entities.....	445
14.1	Introduction.....	445
14.2	Management entities for non-SNMP-optimized eOAM profile.....	445
14.2.1	Branch 0x07 “basic attributes” .....	445
14.2.1.1	Attribute <i>aPhyAdminState</i> (0x07/0x00-25).....	445
14.2.1.2	Attribute <i>aAutoNegAdminState</i> (0x07/0x00-4F).....	446
14.2.1.3	Attribute <i>aAutoNegLocalTechnologyAbility</i> (0x07/0x00-52) .....	446
14.2.1.4	Attribute <i>aAutoNegAdvertisedTechnologyAbility</i> (0x07/0x00-53) .....	447
14.2.1.5	Attribute <i>aFECAbility</i> (0x07/0x01-39) .....	447
14.2.1.6	Attribute <i>aFECmode</i> (0x07/0x01-3A).....	447
14.2.2	Branch 0xC7 “extended attributes” .....	448
14.2.2.1	Attribute <i>aOnuSerialNumber</i> (0xC7/0x00-01).....	449
14.2.2.2	Attribute <i>aOnuChipsetFwVer</i> (0xC7/0x00-02).....	450
14.2.2.3	Attribute <i>aOnuChipsetId</i> (0xC7/0x00-03) .....	451
14.2.2.4	Attribute <i>aOnuTRxStatus</i> (0xC7/0x00-05).....	452
14.2.2.5	Attribute <i>aOnuCapabilities</i> (0xC7/0x00-07).....	453
14.2.2.6	Attribute <i>aOnuConfigTimeDrift</i> (0xC7/0x00-08) .....	456
14.2.2.7	Attribute <i>aOnuConfigSnmpGlobal1</i> (0xC7/0x00-09) .....	457

14.2.2.8	Attribute <i>aOnuConfigSnmpGlobal2</i> (0xC7/0x00-0A) .....	458
14.2.2.9	Attribute <i>aOnuConfigPonActive</i> (0xC7/0x00-0B) .....	459
14.2.2.10	Attribute <i>aOnuCapabilitiesExt</i> (0xC7/0x00-0C) .....	460
14.2.2.11	Attribute <i>aOnuCapabilitiesPwrSav</i> (0xC7/0x00-0D) .....	461
14.2.2.12	Attribute <i>aOnuConfigPwrSav</i> (0xC7/0x00-0E) .....	462
14.2.2.13	Attribute <i>aOnuConfigProtection</i> (0xC7/0x00-0F) .....	463
14.2.2.14	Attribute <i>aOnuConfigHguTr069</i> (0xC7/0x00-C1) .....	464
14.2.2.15	Attribute <i>aPortEthStatus</i> (0xC7/0x00-11) .....	466
14.2.2.16	Attribute <i>aPortEthFlowControl</i> (0xC7/0x00-12) .....	466
14.2.2.17	Attribute <i>aPortEthPolicingUs</i> (0xC7/0x00-13) .....	467
14.2.2.18	Attribute <i>aPortEthPolicingDs</i> (0xC7/0x00-16) .....	468
14.2.2.19	Attribute <i>aPortLoopDetection</i> (0xC7/0x00-17) .....	469
14.2.2.20	Attribute <i>aPortDisableLooped</i> (0xC7/0x00-18) .....	470
14.2.2.21	Attribute <i>aPortVLAN</i> (0xC7/0x00-21) .....	470
14.2.2.22	Attribute <i>aPortClassAndMark</i> (0xC7/0x00-31) .....	475
14.2.2.23	Attribute <i>aMulticastVidConfig</i> (0xC7/0x00-41) .....	479
14.2.2.24	Attribute <i>aMulticastVlanOpConfig</i> (0xC7/0x00-42) .....	480
14.2.2.25	Attribute <i>aMulticastControlMode</i> (0xC7/0x00-43) .....	482
14.2.2.26	Attribute <i>aMulticastControlTable</i> (0xC7/0x00-44) .....	482
14.2.2.27	Attribute <i>aMulticastGroupCountMax</i> (0xC7/0x00-45) .....	487
14.2.2.28	Attribute <i>aFastLeaveCapab</i> (0xC7/0x00-46) .....	487
14.2.2.29	Attribute <i>aFastLeaveAdminStatus</i> (0xC7/0x00-47) .....	488
14.2.2.30	Attribute <i>aOnuTxPowerSupplyControl</i> (0xC7/0x00-A1) .....	489
14.2.2.31	Attribute <i>aOnuEdpConfigM</i> (0xC7/0x00-A2) .....	490
14.2.2.32	Attribute <i>aOnuEdpConfigS</i> (0xC7/0x00-A3) .....	491
14.2.2.33	Attribute <i>aMacAgeTimeConfig</i> (0xC7/0x00-A4) .....	494
14.2.2.34	Attribute <i>aPerfMonAdminStatus</i> (0xC7/0x00-B1) .....	494
14.2.2.35	Attribute <i>aPerfMonDataCurrent</i> (0xC7/0x00-B2) .....	495
14.2.2.36	Attribute <i>aPerfMonDataHistory</i> (0xC7/0x00-B3) .....	502
14.2.3	Branch 0x37 “identification” .....	508
14.2.3.1	<i>Object_ID</i> TLV .....	508
14.2.3.1.1	<i>ObjectType</i> field .....	509
14.2.3.1.2	<i>ObjectInstance</i> field .....	509
14.2.3.2	Examples of <i>Object_ID</i> TLV use cases (informative) .....	510
14.2.4	Branch 0x09 “basic actions” .....	512
14.2.4.1	Action <i>acOnuUniAdminStatus</i> (0x09/0x00-05) .....	512
14.2.4.2	Action <i>acOnuUniAutoNegRestart</i> (0x09/0x00-0B) .....	513
14.2.4.3	Action <i>acOnuUniNegAdminStatus</i> (0x09/0x00-0C) .....	513
14.2.5	Branch 0xC9 “extended actions” .....	514
14.2.5.1	Action <i>acOnuReboot</i> (0xC9/0x00-01) .....	514
14.2.5.2	Action <i>acOnuSleepControl</i> (0xC9/0x00-02) .....	514
14.2.5.3	Action <i>acFastLeaveAdminControl</i> (0xC9/0x00-48) .....	516
14.2.5.4	Action <i>acMLOnuMode</i> (0xC9/0x02-02) .....	517
14.3	Management entities for SNMP-optimized eOAM profile .....	517
14.3.1	Branch 0xB7 “extended attributes” .....	517
14.3.1.1	Attribute <i>aOnuEncryptionConfig</i> (0xB7/0x00-01) .....	518
14.3.1.2	Attribute <i>aQosQueueSetLimit</i> (0xB7/0x00-05) .....	519
14.3.1.3	Attribute <i>aQosFlowControl</i> (0xB7/0x00-09) .....	519
14.3.1.4	Attribute <i>aQueueSize</i> (0xB7/0x00-0A) .....	521
14.3.1.5	Attribute <i>aVlanMode</i> (0xB7/0x00-0B) .....	522
14.3.1.6	Attribute <i>aOnuErroredFrameWindow</i> (0xB7/0x00-0C) .....	523
14.3.1.7	Attribute <i>aOnuErroredFrameThr</i> (0xB7/0x00-0D) .....	524
14.3.1.8	Attribute <i>aQosPolicerRate</i> (0xB7/0x00-0F) .....	524
14.3.1.9	Attribute <i>aQosPolicerBurst</i> (0xB7/0x00-10) .....	525
14.3.1.10	Attribute <i>aUnipLinkMode</i> (0xB7/0x00-11) .....	526

14.3.1.11	Attribute <i>aVlanTagFilter</i> (0xB7/0x00-13)	527
14.3.1.12	Attribute <i>aVlanTagValue</i> (0xB7/0x00-14)	528
14.3.1.13	Attribute <i>aVlanPonVIDValue</i> (0xB7/0x00-15)	529
14.3.1.14	Attribute <i>aOnuFEC</i> (0xB7/0x00-16)	530
14.3.1.15	Attribute <i>aMcastFilterOperation</i> (0xB7/0x00-17)	531
14.3.1.16	Attribute <i>aOnuMACAddressLearning</i> (0xB7/0x00-1C)	533
14.3.1.17	Attribute <i>aPsEligibleModesCapability</i> (0xB7/0x00-20)	533
14.3.1.18	Attribute <i>aPsEarlyWakeupCapability</i> (0xB7/0x00-21)	534
14.3.1.19	Attribute <i>aPsSleepIndCapability</i> (0xB7/0x00-22)	534
14.3.1.20	Attribute <i>aPsAckCapability</i> (0xB7/0x00-23)	535
14.3.1.21	Attribute <i>aPsPowerOnDelay</i> (0xB7/0x00-24)	536
14.3.1.22	Attribute <i>aPsEarlyWakeupConfig</i> (0xB7/0x00-27)	536
14.3.1.23	Attribute <i>aPsSleepIndConfig</i> (0xB7/0x00-28)	537
14.3.1.24	Attribute <i>aPsAckEnableConfig</i> (0xB7/0x00-29)	537
14.3.1.25	Attribute <i>aPsSleepDurationConfig</i> (0xB7/0x00-2A)	538
14.3.1.26	Attribute <i>aPsActiveDurationConfig</i> (0xB7/0x00-2B)	539
14.3.1.27	Attribute <i>aPsHoldDurationConfig</i> (0xB7/0x00-2C)	539
14.3.1.28	Attribute <i>aPonpTemperature</i> (0xB7/0x00-30)	539
14.3.1.29	Attribute <i>aPonpOpticalTRxSupplyVoltage</i> (0xB7/0x00-31)	540
14.3.1.30	Attribute <i>aPonpOpticalTxBiasCurrent</i> (0xB7/0x00-32)	540
14.3.1.31	Attribute <i>aPonpOpticalTxOutputPower</i> (0xB7/0x00-33)	541
14.3.1.32	Attribute <i>aPonpOpticalRxInputPower</i> (0xB7/0x00-34)	541
14.3.1.33	Attribute <i>aUnipTosCosConversion</i> (0xB7/0x00-35)	542
14.3.1.34	Attribute <i>aPtHoldOverTimeOut</i> (0xB7/0x00-38)	544
14.3.1.35	Attribute <i>aPtTLoSOptical</i> (0xB7/0x00-39)	544
14.3.1.36	Attribute <i>aPtTLoSMAC</i> (0xB7/0x00-3A)	545
14.3.1.37	Attribute <i>aOnuSystemInfo</i> (0xB7/0x00-40)	545
14.3.1.38	Attribute <i>aUnipInfo</i> (0xB7/0x00-41)	548
14.3.1.39	Attribute <i>aOnuPriorityQueueCount</i> (0xB7/0x00-42)	549
14.3.1.40	Attribute <i>aUnipTargetQueuePriority</i> (0xB7/0x00-43)	549
14.3.1.41	Attribute <i>aOnuSoftwareDownloadInfo</i> (0xB7/0x00-44)	551
14.3.1.42	Attribute <i>aOnuConfig</i> (0xB7/0x00-45)	552
14.3.2	Branch 0xB6 “object identification”	553
14.3.2.1	<i>Object_ID</i> TLV	553
14.3.2.1.1	Object Type field	553
14.3.2.1.2	Object Instance field	554
14.3.2.2	Example of <i>Object_ID</i> TLV use cases (informative)	554
14.3.3	Branch 0xB9 “extended actions”	557
14.3.3.1	Action <i>acOnuRestart</i> (0xB9/0x00-0E)	557
14.3.3.2	Action <i>acSoftwareDownload</i> (0xB9/0x00-12)	558
14.4	Management entities for DPoE eOAM profile	559
14.4.1	Branch 0xD6 “identification”	559
14.4.1.1	<i>Object Context</i> TLV	559
14.4.1.1.1	Object Type field	559
14.4.1.1.2	Object Instance field	560
14.4.1.1.2.1	Object Instance field for ONU (0xD6/0x00-00)	560
14.4.1.1.2.2	Object Instance field for PON Port (0xD6/0x00-01)	560
14.4.1.1.2.3	Object Instance field for LLID (0xD6/0x00-02)	561
14.4.1.1.2.4	Object Instance field for UNI Port (0xD6/0x00-03)	561
14.4.1.1.2.5	Object Instance field for Queue (0xD6/0x00-04)	561
14.4.1.1.2.6	Object Instance field for mLLID (0xD6/0x00-06)	562
14.4.2	Branch 0x07 “basic attributes”	562
14.4.2.1	ONU management	563
14.4.2.1.1	Attribute <i>aFramesTransmittedOK</i> (0x07/0x00-02)	563
14.4.2.1.2	Attribute <i>aSingleCollisionFrames</i> (0x07/0x00-03)	564

14.4.2.1.3	Attribute <i>aMultipleCollisionFrames</i> (0x07/0x00-04)	564
14.4.2.1.4	Attribute <i>aFramesReceivedOK</i> (0x07/0x00-05)	565
14.4.2.1.5	Attribute <i>aFrameCheckSequenceErrors</i> (0x07/0x00-06)	565
14.4.2.1.6	Attribute <i>aAlignmentErrors</i> (0x07/0x00-07)	566
14.4.2.1.7	Attribute <i>aOctetsTransmittedOK</i> (0x07/0x00-08)	566
14.4.2.1.8	Attribute <i>aFramesWithDeferredXmissions</i> (0x07/0x00-09)	567
14.4.2.1.9	Attribute <i>aLateCollisions</i> (0x07/0x00-0A)	567
14.4.2.1.10	Attribute <i>aFramesAbortedDueToXSColls</i> (0x07/0x00-0B)	568
14.4.2.1.11	Attribute <i>aFramesLostDueToIntMACXmitError</i> (0x07/0x00-0C)	568
14.4.2.1.12	Attribute <i>aOctetsReceivedOK</i> (0x07/0x00-0E)	569
14.4.2.1.13	Attribute <i>aFramesLostDueToIntMACRcvError</i> (0x07/0x00-0F)	569
14.4.2.1.14	Attribute <i>aMulticastFramesXmittedOK</i> (0x07/0x00-12)	570
14.4.2.1.15	Attribute <i>aBroadcastFramesXmittedOK</i> (0x07/0x00-13)	570
14.4.2.1.16	Attribute <i>aFramesWithExcessiveDeferral</i> (0x07/0x00-14)	571
14.4.2.1.17	Attribute <i>aMulticastFramesReceivedOK</i> (0x07/0x00-15)	571
14.4.2.1.18	Attribute <i>aBroadcastFramesReceivedOK</i> (0x07/0x00-16)	572
14.4.2.1.19	Attribute <i>aInRangeLengthErrors</i> (0x07/0x00-17)	572
14.4.2.1.20	Attribute <i>aOutOfRangeLengthField</i> (0x07/0x00-18)	573
14.4.2.1.21	Attribute <i>aFrameTooLongErrors</i> (0x07/0x00-19)	573
14.4.2.1.22	Attribute <i>aMACEnableStatus</i> (0x07/0x00-1A)	574
14.4.2.1.23	Attribute <i>aReadWriteMACAddress</i> (0x07/0x00-1D)	574
14.4.2.2	PHY management	575
14.4.2.2.1	Attribute <i>aPhyType</i> (0x07/0x00-20)	575
14.4.2.2.2	Attribute <i>aSymbolErrorDuringCarrier</i> (0x07/0x00-23)	576
14.4.2.2.3	Attribute <i>aPhyAdminState</i> (0x07/0x00-25)	576
14.4.2.3	MAU management	577
14.4.2.3.1	Attribute <i>aMediaAvailable</i> (0x07/0x00-47)	577
14.4.2.4	MAC management	577
14.4.2.4.1	Attribute <i>aDuplexStatus</i> (0x07/0x00-5A)	577
14.4.2.5	MAC Control management	578
14.4.2.5.1	Attribute <i>aMACControlFunctionsSupported</i> (0x07/0x00-5D)	578
14.4.2.5.2	Attribute <i>aMACControlFramesTransmitted</i> (0x07/0x00-5E)	578
14.4.2.5.3	Attribute <i>aMACControlFramesReceived</i> (0x07/0x00-5F)	578
14.4.2.5.4	Attribute <i>aUnsupportedOpcodesReceived</i> (0x07/0x00-60)	579
14.4.2.5.5	Attribute <i>aPAUSEMACCtrlFramesTransmitted</i> (0x07/0x00-62)	579
14.4.2.5.6	Attribute <i>aPAUSEMACCtrlFramesReceived</i> (0x07/0x00-63)	580
14.4.2.6	OMP emulation management	580
14.4.2.6.1	Attribute <i>aMPCPMACCtrlFramesTransmitted</i> (0x07/0x01-18)	580
14.4.2.6.2	Attribute <i>aMPCPMACCtrlFramesReceived</i> (0x07/0x01-19)	581
14.4.2.6.3	Attribute <i>aMPCPDiscoveryWindowsSent</i> (0x07/0x01-20)	581
14.4.2.6.4	Attribute <i>aMPCPDiscoveryTimeout</i> (0x07/0x01-22)	582
14.4.2.6.5	Attribute <i>aMPCPTxRegAck</i> (0x07/0x01-3C)	582
14.4.2.6.6	Attribute <i>aMPCPTxRegRequest</i> (0x07/0x01-3E)	583
14.4.2.6.7	Attribute <i>aMPCPTxReport</i> (0x07/0x01-3F)	583
14.4.2.6.8	Attribute <i>aMPCPRxGate</i> (0x07/0x01-40)	584
14.4.2.6.9	Attribute <i>aMPCPRxRegister</i> (0x07/0x01-42)	584
14.4.2.7	FEC management	584
14.4.2.7.1	Attribute <i>aFECCorrectedBlocks</i> (0x07/0x01-24)	584
14.4.2.7.2	Attribute <i>aFECUncorrectableBlocks</i> (0x07/0x01-25)	585
14.4.2.7.3	Attribute <i>aFECAbility</i> (0x07/0x01-39)	585
14.4.2.7.4	Attribute <i>aFECmode</i> (0x07/0x01-3A)	586
14.4.3	Branch 0xD7 “extended attributes”	587
14.4.3.1	ONU management	590

14.4.3.1.1	<i>Sequence TLV (0xD7/0x00-01)</i> .....	590
14.4.3.1.2	Attribute <i>aOnuId (0xD7/0x00-02)</i> .....	590
14.4.3.1.3	Attribute <i>aOnuFwVersion (0xD7/0x00-03)</i> .....	591
14.4.3.1.4	Attribute <i>aOnuInfoChipset (0xD7/0x00-04)</i> .....	592
14.4.3.1.5	Attribute <i>aOnuInfoDateManufacture (0xD7/0x00-05)</i> .....	592
14.4.3.1.6	Attribute <i>aOnuInfoManufacturer (0xD7/0x00-06)</i> .....	593
14.4.3.1.7	Attribute <i>aOnuLlidCount (0xD7/0x00-07)</i> .....	594
14.4.3.1.8	Attribute <i>aOnuPonPortCount (0xD7/0x00-08)</i> .....	594
14.4.3.1.9	Attribute <i>aOnuUniPortCount (0xD7/0x00-09)</i> .....	595
14.4.3.1.10	Attribute <i>aOnuInfoPacketBuffer (0xD7/0x00-0A)</i> .....	595
14.4.3.1.11	Attribute <i>aLlidReportThresholds (0xD7/0x00-0B)</i> .....	597
14.4.3.1.12	Attribute <i>aLlidForwardState (0xD7/0x00-0C)</i> .....	598
14.4.3.1.13	Attribute <i>aLlidOamFrameRate (0xD7/0x00-0D)</i> .....	599
14.4.3.1.14	Attribute <i>aOnuManOrgName (0xD7/0x00-0E)</i> .....	599
14.4.3.1.15	Attribute <i>aOnuCvcCvsValidity (0xD7/0x00-0F)</i> .....	600
14.4.3.1.16	Attribute <i>aOnuUniPortType (0xD7/0x00-10)</i> .....	601
14.4.3.1.17	Attribute <i>aVendorName (0xD7/0x00-11)</i> .....	602
14.4.3.1.18	Attribute <i>aModelNumber (0xD7/0x00-12)</i> .....	602
14.4.3.1.19	Attribute <i>aHardwareVersion (0xD7/0x00-13)</i> .....	603
14.4.3.1.20	Attribute <i>aLineRateMode (0xD7/0x00-14)</i> .....	603
14.4.3.1.21	Attribute <i>aOnuFwFileName (0xD7/0x01-0E)</i> .....	605
14.4.3.2	Bridging.....	606
14.4.3.2.1	Attribute <i>aOnuDynMacTableSize (0xD7/0x01-01)</i> .....	606
14.4.3.2.2	Attribute <i>aOnuDynMacAgeLimit (0xD7/0x01-02)</i> .....	606
14.4.3.2.3	Attribute <i>aUniDynMacTable (0xD7/0x01-03)</i> .....	607
14.4.3.2.4	Attribute <i>aUniStatMacTable (0xD7/0x01-04)</i> .....	608
14.4.3.2.5	Attribute <i>aUniPortAutoNeg (0xD7/0x01-05)</i> .....	609
14.4.3.2.6	Attribute <i>aUniAdmissionControl (0xD7/0x01-06)</i> .....	610
14.4.3.2.7	Attribute <i>aUniMinLearnMacCount (0xD7/0x01-07)</i> .....	610
14.4.3.2.8	Attribute <i>aUniMaxLearnMacCount (0xD7/0x01-08)</i> .....	611
14.4.3.2.9	Attribute <i>aOnuMaxLearnMacCount (0xD7/0x01-09)</i> .....	611
14.4.3.2.10	Attribute <i>aUniLengthDiscard (0xD7/0x01-0A)</i> .....	612
14.4.3.2.11	Attribute <i>aUniFloodUnknown (0xD7/0x01-0B)</i> .....	612
14.4.3.2.12	Attribute <i>aUniLocalSwitching (0xD7/0x01-0C)</i> .....	613
14.4.3.2.13	Attribute <i>aUniMacTableFull (0xD7/0x01-0F)</i> .....	614
14.4.3.2.14	Attribute <i>aOnuMulticastLlid (0xD7/0x01-10)</i> .....	614
14.4.3.2.15	Attribute <i>aOnuMaxFrameSizeCapability (0xD7/0x01-12)</i> .....	615
14.4.3.2.16	Attribute <i>aUniMaxFrameSizeLimit (0xD7/0x01-13)</i> .....	616
14.4.3.2.17	Attribute <i>aOnuPortConfig (0xD7/0x01-14)</i> .....	616
14.4.3.2.18	Attribute <i>aQueueConfig (0xD7/0x01-15)</i> .....	617
14.4.3.3	Statistics and counters.....	618
14.4.3.3.1	Attribute <i>aCountRxFramesGreen (0xD7/0x02-01)</i> .....	618
14.4.3.3.2	Attribute <i>aCountTxFramesGreen (0xD7/0x02-02)</i> .....	619
14.4.3.3.3	Attribute <i>aCountRxFrames2Short (0xD7/0x02-03)</i> .....	619
14.4.3.3.4	Attribute <i>aCountRxFrames64 (0xD7/0x02-04)</i> .....	620
14.4.3.3.5	Attribute <i>aCountRxFrames65to127 (0xD7/0x02-05)</i> .....	620
14.4.3.3.6	Attribute <i>aCountRxFrames128to255 (0xD7/0x02-06)</i> .....	621
14.4.3.3.7	Attribute <i>aCountRxFrames256to511 (0xD7/0x02-07)</i> .....	621
14.4.3.3.8	Attribute <i>aCountRxFrames512to1023 (0xD7/0x02-08)</i> .....	622
14.4.3.3.9	Attribute <i>aCountRxFrames1024to1518 (0xD7/0x02-09)</i> .....	622
14.4.3.3.10	Attribute <i>aCountRxFrames1519 (0xD7/0x02-0A)</i> .....	623
14.4.3.3.11	Attribute <i>aCountTxFrames64 (0xD7/0x02-0B)</i> .....	623
14.4.3.3.12	Attribute <i>aCountTxFrames65to127 (0xD7/0x02-0C)</i> .....	624
14.4.3.3.13	Attribute <i>aCountTxFrames128to255 (0xD7/0x02-0D)</i> .....	624
14.4.3.3.14	Attribute <i>aCountTxFrames256to511 (0xD7/0x02-0E)</i> .....	625

14.4.3.3.15	Attribute <i>aCountTxFrames512to1023</i> (0xD7/0x02-0F)	625
14.4.3.3.16	Attribute <i>aCountTxFrames1024to1518</i> (0xD7/0x02-10)	626
14.4.3.3.17	Attribute <i>aCountTxFrames1519</i> (0xD7/0x02-11)	627
14.4.3.3.18	Attribute <i>aQueueDelayThr</i> (0xD7/0x02-12)	627
14.4.3.3.19	Attribute <i>aQueueDelayValue</i> (0xD7/0x02-13)	628
14.4.3.3.20	Attribute <i>aCountFramesDropped</i> (0xD7/0x02-14)	628
14.4.3.3.21	Attribute <i>aCountOctetsDropped</i> (0xD7/0x02-15)	629
14.4.3.3.22	Attribute <i>aCountOctetsDelayed</i> (0xD7/0x02-16)	629
14.4.3.3.23	Attribute <i>aCountUsOctetsUnused</i> (0xD7/0x02-17)	630
14.4.3.3.24	Attribute <i>aPonOptMonitTemp</i> (0xD7/0x02-1D)	630
14.4.3.3.25	Attribute <i>aPonOptMonitVcc</i> (0xD7/0x02-1E)	631
14.4.3.3.26	Attribute <i>aPonOptMonitBias</i> (0xD7/0x02-1F)	631
14.4.3.3.27	Attribute <i>aPonOptMonitTxPower</i> (0xD7/0x02-20)	632
14.4.3.3.28	Attribute <i>aPonOptMonitRxPower</i> (0xD7/0x02-21)	632
14.4.3.3.29	Attribute <i>aCounterRxFramesY</i> (0xD7/0x02-22)	633
14.4.3.3.30	Attribute <i>aCounterTxFramesY</i> (0xD7/0x02-23)	633
14.4.3.3.31	Attribute <i>aCounterTxOctetsG</i> (0xD7/0x02-24)	634
14.4.3.3.32	Attribute <i>aCounterRxOctetsY</i> (0xD7/0x02-25)	634
14.4.3.3.33	Attribute <i>aCounterRxOctetsG</i> (0xD7/0x02-26)	635
14.4.3.3.34	Attribute <i>aCounterTxOctetsY</i> (0xD7/0x02-27)	635
14.4.3.3.35	Attribute <i>aCounterTxFramesL2Unicast</i> (0xD7/0x02-28)	636
14.4.3.3.36	Attribute <i>aCounterTxFramesL2Multicast</i> (0xD7/0x02-29)	637
14.4.3.3.37	Attribute <i>aCounterTxFramesL2Broadcast</i> (0xD7/0x02-2A)	637
14.4.3.3.38	Attribute <i>aCounterRxFramesL2Unicast</i> (0xD7/0x02-2B)	638
14.4.3.3.39	Attribute <i>aCounterRxFramesL2Multicast</i> (0xD7/0x02-2C)	638
14.4.3.3.40	Attribute <i>aCounterRxFramesL2Broadcast</i> (0xD7/0x02-2D)	639
14.4.3.3.41	Attribute <i>aOnuCounterNumber</i> (0xD7/0x02-2E)	639
14.4.3.3.42	Attribute <i>aCounterRxFramesL2CP</i> (0xD7/0x02-2F)	640
14.4.3.3.43	Attribute <i>aCounterRxOctetsL2CP</i> (0xD7/0x02-30)	640
14.4.3.3.44	Attribute <i>aCounterTxFramesL2CP</i> (0xD7/0x02-31)	641
14.4.3.3.45	Attribute <i>aCounterTxOctetsL2CP</i> (0xD7/0x02-32)	641
14.4.3.3.46	Attribute <i>aCounterDiscardFramesL2CP</i> (0xD7/0x02-33)	642
14.4.3.3.47	Attribute <i>aCounterDiscardOctetsL2CP</i> (0xD7/0x02-34)	642
14.4.3.3.48	Attribute <i>aCounterL2TxErrors</i> (0xD7/0x02-35)	643
14.4.3.3.49	Attribute <i>aCounterL2RxErrors</i> (0xD7/0x02-36)	643
14.4.3.3.50	Attribute <i>aCountFramesOverLimitDroppedUni</i> (0xD7/0x02-37)	644
14.4.3.3.51	Attribute <i>aCountFramesOverLimitDroppedUni</i> (0xD7/0x02-38)	645
14.4.3.4	Alarms	645
14.4.3.4.1	Attribute <i>aAlarmPortStatThr</i> (0xD7/0x03-01)	645
14.4.3.4.2	Attribute <i>aAlarmLlidStatThr</i> (0xD7/0x03-02)	646
14.4.3.4.3	Attribute <i>aAlarmStatusControl</i> (0xD7/0x03-03)	647
14.4.3.5	Encryption	649
14.4.3.5.1	Attribute <i>aEncryptionKeyExpiration</i> (0xD7/0x04-01)	649
14.4.3.5.2	Attribute <i>aEncryptionMode</i> (0xD7/0x04-02)	650
14.4.3.6	Frame processing	651
14.4.3.6.1	Attribute <i>aRuleSetConfig</i> (0xD7/0x05-01)	651
14.4.3.6.1.1	<i>aRuleSetConfig.sClause</i> sub-attribute	652
14.4.3.6.1.2	<i>aRuleSetConfig.sResult</i> sub-attribute	654
14.4.3.6.1.3	<i>Port Ingress Rule TLV</i>	657
14.4.3.6.2	Attribute <i>aRuleCustomField</i> (0xD7/0x05-02)	661
14.4.3.6.2.1	Preamble/L2 Header layer	663
14.4.3.6.2.2	IEEE 802.1ah layer	664
14.4.3.6.2.3	EtherType layer	664
14.4.3.6.2.4	S-VLAN layer	664
14.4.3.6.2.5	C-VLAN layer	665
14.4.3.6.2.6	Multiprotocol Label Switching (MPLS) layer	665

14.4.3.6.2.7	IPv4 layer	665
14.4.3.6.2.8	IPv6 field	666
14.4.3.6.2.9	Generic L3 layer	666
14.4.3.6.2.10	TCP/UDP layer	666
14.4.3.6.2.11	Generic L4 layer	667
14.4.3.6.3	Attribute <i>aRuleTpidCAlter</i> (0xD7/0x05-03)	667
14.4.3.6.4	Attribute <i>aRuleTpidSAlter</i> (0xD7/0x05-04)	668
14.4.3.6.5	Attribute <i>aRuleIpmcFwrConfig</i> (0xD7/0x05-05)	669
14.4.3.6.6	Attribute <i>aRuleTpidIAlter</i> (0xD7/0x05-06)	670
14.4.3.6.7	Attribute <i>aRuleTpidBAlter</i> (0xD7/0x05-07)	671
14.4.3.7	Service-level agreements (SLAs)	672
14.4.3.7.1	Attribute <i>aRateLimitBroadcast</i> (0xD7/0x06-01)	672
14.4.3.7.2	Attribute <i>aQueueCIR</i> (0xD7/0x06-04)	672
14.4.3.7.3	Attribute <i>aFecMode</i> (0xD7/0x06-05)	673
14.4.3.7.4	Attribute <i>aQueueEIR</i> (0xD7/0x06-06)	674
14.4.3.7.5	Attribute <i>aQueueColorMarking</i> (0xD7/0x06-07)	675
14.4.3.7.6	Attribute <i>aQueueRateLimiterCap</i> (0xD7/0x06-08)	677
14.4.3.7.7	Attribute <i>aCouplingFlag</i> (0xD7/0x06-09)	679
14.4.3.8	Power saving	679
14.4.3.8.1	Attribute <i>aOnuPwrSavingCap</i> (0xD7/0xFF-FF)	679
14.4.3.9	Optical Link Protection	680
14.4.3.9.1	Attribute <i>aOnuProtectionCapability</i> (0xD7/0x09-00)	680
14.4.3.9.2	Attribute <i>aOnuConfigProtection</i> (0xD7/0x09-01)	681
14.4.3.9.3	Attribute <i>aOnuConfigPonActive</i> (0xD7/0x09-02)	682
14.4.3.9.4	Attribute <i>aOnuConfigHoldoverPeriod</i> (0xD7/0x09-03)	683
14.4.3.10	Clock transport	684
14.4.3.10.1	Attribute <i>aClockTranspCapab</i> (0xD7/0x07-01)	684
14.4.3.10.2	Attribute <i>aClockTranspStatus</i> (0xD7/0x07-02)	685
14.4.3.10.3	Attribute <i>aClockTranspTransfer</i> (0xD7/0x07-03)	686
14.4.3.10.4	Attribute <i>aClockTranspPropagParam</i> (0xD7/0x07-04)	686
14.4.3.10.5	Attribute <i>aClockTranspRtt</i> (0xD7/0x07-05)	687
14.4.3.11	UNI management	688
14.4.3.11.1	Attribute <i>aEeeStatus</i> (0xD7/0x08-20)	688
14.4.3.11.2	Attribute <i>aPoeStatus</i> (0xD7/0x08-21)	688
14.4.3.11.3	Attribute <i>aMediaType</i> (0xD7/0x08-22)	689
14.4.4	Branch 0x09 “basic actions”	689
14.4.4.1	Attribute <i>acPhyAdminControl</i> (0x09/0x00-05)	689
14.4.4.2	Attribute <i>acAutoNegRestartAutoConfig</i> (0x09/0x00-0B)	690
14.4.4.3	Attribute <i>acAutoNegAdminControl</i> (0x09/0x00-0C)	690
14.4.5	Branch 0xD9 “extended actions”	691
14.4.5.1	ONU management	691
14.4.5.1.1	Action <i>acOnuReboot</i> (0xD9/0x00-01)	691
14.4.5.2	Bridging	692
14.4.5.2.1	Action <i>acMacClearDynamicTable</i> (0xD9/0x01-01)	692
14.4.5.2.2	Action <i>acMacAddDynamicAddress</i> (0xD9/0x01-02)	692
14.4.5.2.3	Action <i>acMacDeleteDynamicAddress</i> (0xD9/0x01-03)	693
14.4.5.2.4	Action <i>acMacClearStaticTable</i> (0xD9/0x01-04)	694
14.4.5.2.5	Action <i>acMacAddStaticAddress</i> (0xD9/0x01-05)	694
14.4.5.2.6	Action <i>acMacDeleteStaticAddress</i> (0xD9/0x01-06)	695
14.4.5.2.7	Action <i>acConfigMulticastLlid</i> (0xD9/0x01-07)	696
14.4.5.2.8	Attribute <i>acGetUniMacLearned</i> (0xD9/0x01-08)	697
14.4.5.3	Statistics and counters	698
14.4.5.3.1	Action <i>acCountersClear</i> (0xD9/0x02-01)	698
14.4.5.4	Alarms	698
14.4.5.4.1	Action <i>acAlarmGetCurrentSummary</i> (0xD9/0x03-01)	698
14.4.5.5	Frame processing	699

14.4.5.5.1	Action <i>acRulesClearAll</i> (0xD9/0x05-01)	699
14.4.5.5.2	Action <i>acRulesAddOne</i> (0xD9/0x05-02)	699
14.4.5.5.3	Action <i>acRulesDeleteOne</i> (0xD9/0x05-03)	699
14.4.5.6	Transmission control	700
14.4.5.6.1	Action <i>acEnableUserTraffic</i> (0xD9/0x06-01)	700
14.4.5.6.2	Action <i>acDisableUserTraffic</i> (0xD9/0x06-02)	700
14.4.5.6.3	Action <i>acLoopbackEnable</i> (0xD9/0x06-03)	700
14.4.5.6.4	Action <i>acLoopbackDisable</i> (0xD9/0x06-04)	701
14.4.5.6.5	Action <i>acLaserTxPowerOff</i> (0xD9/0x06-05)	701
14.4.6	Branch 0xD8 “programmable counters”	702
14.4.6.1	Attribute <i>aCounterGeneralN</i> (0xD8/0x00-00 to 0xD8/0x7F-FF)	702
Annex 4A	(normative) Protocol implementation conformance statement (PICS) for Package A	704
4A.1	Introduction	704
4A.2	ONU-specific PICS	705
4A.2.1	Implementation identification	705
4A.2.2	Protocol summary	705
4A.2.3	<i>REPORT</i> MPCP format	705
4A.2.4	Report queue length calculation	706
4A.2.5	Queue service discipline	706
4A.2.6	ONU transceiver status monitoring	706
4A.2.7	Events	707
4A.2.8	Data encryption	708
4A.2.9	ONU authentication	708
4A.2.10	Management	708
4A.2.11	Device and capability discovery	711
4A.2.12	Software update	712
4A.2.13	Management entities	712
4A.2.14	Port-specific loopback	730
4A.2.15	Power saving	730
4A.2.16	ONU VLAN modes	731
4A.2.17	ONU tunneling modes	732
4A.2.18	Multicast connectivity	732
4A.2.19	Trunk protection	733
4A.2.20	Tree protection	733
4A.3	OLT-specific PICS	735
4A.3.1	Implementation identification	735
4A.3.2	Protocol summary	735
4A.3.3	<i>REPORT</i> MPCP format	735
4A.3.4	OLT transceiver status monitoring	736
4A.3.5	Events	737
4A.3.6	Data encryption	737
4A.3.7	ONU authentication	737
4A.3.8	Management	737
4A.3.9	Device and capability discovery	740
4A.3.10	Software update	741
4A.3.11	Management entities	741
4A.3.12	Port-specific loopback	755
4A.3.13	Power saving	755
4A.3.14	OLT VLAN modes	756
4A.3.15	OLT tunneling modes	756
4A.3.16	Multicast connectivity	757
4A.3.17	Multicast connectivity, coexistence	759
4A.3.18	Trunk protection	759
4A.3.19	Tree protection	760

Annex 4B	(normative) Protocol implementation conformance statement (PICS) for Package B.....	762
4B.1	Introduction.....	762
4B.2	ONU-specific PICS.....	763
4B.2.1	Implementation identification.....	763
4B.2.2	Protocol summary.....	763
4B.2.3	<i>REPORT</i> MPCP format.....	763
4B.2.4	Report queue length calculation.....	765
4B.2.5	Queue service discipline.....	765
4B.2.6	Discovery and configuration of queue parameters.....	766
4B.2.7	ONU transceiver status monitoring.....	767
4B.2.8	Events.....	768
4B.2.9	Optical link protection, trunk type.....	768
4B.2.10	Data encryption.....	768
4B.2.11	ONU authentication.....	769
4B.2.12	Management.....	770
4B.2.13	Device and capability discovery.....	774
4B.2.14	Software update.....	775
4B.2.15	Management entities.....	775
4B.2.16	Power saving.....	778
4B.2.17	ONU VLAN modes.....	780
4B.2.18	Multicast connectivity.....	781
4B.3	OLT-specific PICS.....	782
4B.3.1	Implementation identification.....	782
4B.3.2	Protocol summary.....	782
4B.3.3	<i>REPORT</i> MPCP format.....	782
4B.3.4	Report queue length calculation.....	783
4B.3.5	Queue service discipline.....	783
4B.3.6	Discovery and configuration of queue parameters.....	784
4B.3.7	OLT transceiver status monitoring.....	784
4B.3.8	Events.....	785
4B.3.9	Optical link protection, trunk type.....	785
4B.3.10	Data encryption.....	786
4B.3.11	ONU authentication.....	786
4B.3.12	Management.....	787
4B.3.13	Device and capability discovery.....	789
4B.3.14	Software update.....	790
4B.3.15	Management entities.....	790
4B.3.16	Power saving.....	793
4B.3.17	OLT VLAN modes.....	794
4B.3.18	Multicast connectivity.....	795
4B.3.19	Multicast connectivity, coexistence.....	796
Annex 4C	(normative) Protocol implementation conformance statement (PICS) for Package C.....	797
4C.1	Introduction.....	797
4C.2	ONU-specific PICS.....	798
4C.2.1	Implementation identification.....	798
4C.2.2	Protocol summary.....	798
4C.2.3	Support for EDP.....	798
4C.2.4	<i>REPORT</i> MPCP format.....	799
4C.2.5	Report queue length calculation.....	799
4C.2.6	Queue service discipline.....	800
4C.2.7	ONU transceiver status monitoring.....	800
4C.2.8	UNI port loop detection.....	800
4C.2.9	Remote ONU transmitter power supply control.....	801
4C.2.10	Events.....	801
4C.2.11	Trunk protection.....	803

4C.2.12 Tree protection.....	803
4C.2.13 ONU authentication .....	804
4C.2.14 Management.....	805
4C.2.15 Device and capability discovery .....	810
4C.2.16 Software update .....	811
4C.2.17 Management entities .....	812
4C.2.18 Power saving.....	818
4C.2.19 Performance monitoring .....	819
4C.2.20 ONU VLAN modes .....	820
4C.2.21 Multicast connectivity.....	823
4C.2.22 MAC aging .....	824
4C.3 OLT-specific PICS.....	825
4C.3.1 Implementation identification.....	825
4C.3.2 Protocol summary .....	825
4C.3.3 Support for EDP.....	825
4C.3.4 <i>REPORT</i> MPCP format .....	826
4C.3.5 OLT transceiver status monitoring .....	826
4C.3.6 UNI port loop detection .....	826
4C.3.7 Remote ONU transmitter power supply control .....	827
4C.3.8 Events .....	827
4C.3.9 Trunk protection .....	828
4C.3.10 Tree protection.....	828
4C.3.11 ONU authentication .....	829
4C.3.12 Management.....	830
4C.3.13 Device and capability discovery .....	833
4C.3.14 Software update .....	834
4C.3.15 Management entities .....	835
4C.3.16 Power saving.....	840
4C.3.17 Performance monitoring .....	841
4C.3.18 OLT VLAN modes .....	842
4C.3.19 Multicast connectivity.....	844
4C.3.20 Multicast connectivity, coexistence .....	847
4C.3.21 MAC aging .....	847
Annex 5A (informative) Relation to other architecture models .....	848
5A.1 Introduction.....	848
5A.2 Relation to the BBF TR-200 architecture model.....	848
5A.2.1 A single-customer ONU architecture.....	848
5A.2.2 A multi-customer ONU architecture.....	849
5A.3 Relation to the MEF 10.2 architecture model .....	850
Annex 7A (normative) EPON Data Path (EDP) of BBF TR-200 .....	851
7A.1 Introduction.....	851
7A.2 EDP definition .....	851
7A.3 EDP identification.....	851
7A.4 EDP implementation.....	851
7A.5 EDP management.....	854
Annex 9A (informative) Measurement of bRTT in trunk-protected EPON.....	855
9A.1 Introduction.....	855
9A.2 Method 1: dynamic measurement of bRTT .....	855
9A.3 Method 2: post-switchover measurement of bRTT .....	856

# IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)

## 1 Overview

### 1.1 Scope

This standard describes the system-level requirements needed to provide service-level, multi-vendor interoperability of Ethernet Passive Optical Network (EPON) equipment. The specifications complement the existing IEEE 802.3™ and IEEE 802.1™ standards, which enable the interoperability at the Physical Layer and Data Link Layer.<sup>1</sup> Specifically included in this specification are

- EPON system-level interoperability specifications covering equipment functionality, traffic engineering, and service-level quality of service/class of service (QoS/CoS) mechanisms;
- Management specifications covering equipment management, service management, and power utilization.

### 1.2 Purpose

The purpose of this standard is to build upon the IEEE 802.3ah (1G-EPON) and IEEE 802.3av (10G-EPON) Physical Layer and Data Link Layer standards and create a system-level and network-level standard, thus allowing full “plug-and-play” interoperability of the transport, service, and control planes in a multi-vendor environment.

### 1.3 Coverage

This specification for Service Interoperability in Ethernet Passive Optical Networks (SIEPON) provides a series of requirements for the operation of Optical Network Unit (ONU) and Optical Line Terminal (OLT) devices. To foster interoperability across the PON among equipment from different EPON vendors, this standard specifies the flow of information exchanged between the ONU and OLT as well as their associated behaviors. The interaction between the OLT and network management system (NMS) as well as between the ONU and customer premise equipment (CPE) devices is outside the scope of this specification and not covered in this document.

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<sup>1</sup> Information on references can be found in Clause 2.