14 Management entities

14.1 Introduction

14.2 Branch 0xDA “identification”

14.3 Branch 0x07 “basic attributes”

14.4 Branch 0xDB “extended attributes”

This subclause lists extended management attributes, which are not part of the definitions in IEEE Std 802.3, Clause 30. The extended attributes shown in Table 14-56 shall be supported.

The extended attributes can be part of *eOAM_Get_Request*, *eOAM_Get_Response*, *eOAM_Set_Request*, and *eOAM_Set_Response* eOAMPDUs.

Table 14-56—Extended attributes defined in branch 0xDB

Leaf	Attribute	Defined in
Object group: ONU management		
0x00-02	aOnuId	14.4.1.2
0x00-03	aOnuFwVersion	14.4.1.3
0x00-04	aOnuInfoChipset	14.4.1.4
0x00-05	aOnuInfoDateManufacture	14.4.1.5
0x00-06	aOnuInfoManufacturer	14.4.1.6
0x00-07	aOnuLlidCapability	14.4.1.7
0x00-08	aOnuPonPortCount	14.4.1.8
0x00-0A	aOnuInfoPacketBuffer	14.4.1.9
0x00-0C	aLlidForwardState	14.4.1.10
0x00-0D	aLlidOamFrameRate	14.4.1.11
0x00-0E	aOnuManOrgName	14.4.1.12
0x00-0F	aOnuCvcCvsValidity	14.4.1.13
0x00-10	aOnuSrvPortCapability	14.4.1.14
0x00-11	aVendorName	14.4.1.15
0x00-12	aModelNumber	14.4.1.16
0x00-13	aHardwareVersion	14.4.1.17
0x00-14	aLineRateMode	14.4.1.18
0x00-17	aOnuSrvPortDescription	14.4.1.22
0x01-0E	aOnuFwFileName	14.4.1.19
Object group: Bridging		
0x01-01	aOnuDynMacTableSize	14.4.2.1
0x01-02	aOnuDynMacAgeLimit	14.4.2.2
0x01-03	aUniDynMacTable	14.4.2.3
0x01-04	aUniStatMacTable	14.4.2.4
0x01-05	aUniPortAutoNeg	14.4.2.5
0x01-06	aUniAdmissionControl	14.4.2.6
0x01-07	aUniMinLearnMacCount	14.4.2.7
0x01-08	aUniMaxLearnMacCount	14.4.2.8
0x01-09	aOnuMaxLearnMacCount	14.4.2.9
0x01-0A	aUniLengthDiscard	14.4.2.10
0x01-0B	aUniFloodUnknown	14.4.2.11
0x01-0C	aUniLocalSwitching	14.4.2.12
0x01-0F	aUniMacTableFull	14.4.2.13

Leaf	Attribute	Defined in
0x01-12	aOnuMaxFrameSizeCapability	14.4.2.14
0x01-13	aUniMaxFrameSizeLimit	14.4.2.15
0x01-20	aLlidType	14.4.2.16
0x01-21	aSrvPortType	14.4.2.17
0x01-22	aQueueInfo	14.4.2.18
Object group: Statistics and counters		
0x02-01	aCountRxFramesGreen	14.4.3.1
0x02-02	aCountTxFramesGreen	14.4.3.2
0x02-03	aCountRxFrames2Short	14.4.3.3
0x02-04	aCountRxFrames64	14.4.3.4
0x02-05	aCountRxFrames65to127	14.4.3.5
0x02-06	aCountRxFrames128to255	14.4.3.6
0x02-07	aCountRxFrames256to511	14.4.3.7
0x02-08	aCountRxFrames512to1023	14.4.3.8
0x02-09	aCountRxFrames1024to1518	14.4.3.9
0x02-0A	aCountRxFrames1519	14.4.3.10
0x02-0B	aCountTxFrames64	14.4.3.11
0x02-0C	aCountTxFrames65to127	14.4.3.12
0x02-0D	aCountTxFrames128to255	14.4.3.13
0x02-0E	aCountTxFrames256to511	14.4.3.14
0x02-0F	aCountTxFrames512to1023	14.4.3.15
0x02-10	aCountTxFrames1024to1518	14.4.3.16
0x02-11	aCountTxFrames1519	14.4.3.17
0x02-12	aQueueDelayThr	14.4.3.18
0x02-13	aQueueDelayValue	14.4.3.19
0x02-14	aCountFramesDropped	14.4.3.20
0x02-15	aCountOctetsDropped	14.4.3.21
0x02-16	aCountOctetsDelayed	14.4.3.22
0x02-17	aCountUsOctetsUnused	14.4.3.23
0x02-1D	aPonOptMonitTemp	14.4.3.24
0x02-1E	aPonOptMonitVcc	14.4.3.25
0x02-1F	aPonOptMonitBias	14.4.3.26
0x02-20	aPonOptMonitTxPower	14.4.3.27
0x02-21	aPonOptMonitRxPower	14.4.3.28
0x02-22	aCounterRxFramesY	14.4.3.29
0x02-23	aCounterTxFramesY	14.4.3.30
0x02-24	aCounterTxOctetsG	14.4.3.31
0x02-25	aCounterRxOctetsY	14.4.3.32
0x02-26	aCounterRxOctetsG	14.4.3.33
0x02-27	aCounterTxOctetsY	14.4.3.34
0x02-28	aCounterTxFramesL2Unicast	14.4.3.35
0x02-29	aCounterTxFramesL2Multicast	14.4.3.36
0x02-2A	aCounterTxFramesL2Broadcast	14.4.3.37
0x02-2B	aCounterRxFramesL2Unicast	14.4.3.38
0x02-2C	aCounterRxFramesL2Multicast	14.4.3.39
0x02-2D	aCounterRxFramesL2Broadcast	14.4.3.40
0x02-2E	aOnuCounterNumber	14.4.3.41
0x02-2F	aCounterRxFramesL2CP	14.4.3.42
0x02-30	aCounterRxOctetsL2CP	14.4.3.43
0x02-31	aCounterTxFramesL2CP	14.4.3.44
0x02-32	aCounterTxOctetsL2CP	14.4.3.45
0x02-33	aCounterDiscardFramesL2CP	14.4.3.46

Leaf	Attribute	Defined in
0x02-34	aCounterDiscardOctetsL2CP	14.4.3.47
0x02-35	aCounterL2TxErrors	14.4.3.48
0x02-36	aCounterL2RxErrors	14.4.3.49
0x02-37	aCountFramesOverLimitDroppedUni	14.4.3.50
0x02-38	aCountOctetsOverLimitDroppedUni	14.4.3.51
Object group: Alarms		
0x03-01	aAlarmPortStatThr	14.4.4.1
0x03-02	aAlarmLlidStatThr	14.4.4.2
0x03-03	aAlarmStatusControl	14.4.4.3
Object group: Encryption		
0x04-01	aEncryptionKeyExpiration	14.4.5.1
0x04-02	aEncryptionMode	14.4.5.2
Object group: Frame processing		
0x05-01	aRuleSetConfig	14.4.6.1
0x05-02	aRuleCustomField	14.4.6.2
0x05-03	aRuleTpidCAlter	14.4.6.3
0x05-04	aRuleTpidSAlter	14.4.6.4
0x05-06	aRuleTpidIAlter	14.4.6.6
0x05-07	aRuleTpidBAlter	14.4.6.7
Object group: Service-level agreements		
0x06-01	aRateLimitBroadcast	14.4.7.1
0x06-04	aQueueCIR	14.4.7.2
0x06-05	aFecMode	14.4.7.3
0x06-06	aQueueEIR	14.4.7.4
0x06-07	aQueueColorMarking	14.4.7.5
0x06-08	aQueueRateLimiterCap	14.4.7.6
0x06-09	aCouplingFlag	14.4.7.7
Object group: Clock transport		
0x07-01	aClockTranspCapab	14.4.10.1
0x07-02	aClockTranspStatus	14.4.10.2
0x07-03	aClockTranspTransfer	14.4.10.3
0x07-04	aClockTranspPropagParam	14.4.10.4
0x07-05	aClockTranspRtt	14.4.10.5
0x08-00	Reserved, ignored on reception	
0x08-01	Reserved, ignored on reception	
0x08-02	Reserved, ignored on reception	
0x08-03	Reserved, ignored on reception	
Object group: UNI management		
0x08-20	aEeeStatus	14.4.11.1
0x08-21	aPoeStatus	14.4.11.2
0x08-22	aMediaType	14.4.11.3
Object group: Optical Line Protection		
0x09-00	aOnuProtectionCapability	14.4.9.1
0x09-01	aOnuConfigProtection	14.4.9.2
0x09-02	aOnuConfigPonActive	14.4.9.3
0x09-03	aONUConfigHoldoverPeriod	14.4.9.4
Object group: Power saving		
0xFF-FF	aOnuPwrSavingCap	14.4.8.1

1 All other `Leaf` values are reserved and ignored on reception.

14.4.1 ONU management

14.4.1.14 Attribute *aOnuSrvPortCapability* (0xDB/0x00-10)

This attribute represents information about the type of individual service ports supported on the ONU and devices connected to individual service ports (if present), including embedded (eSAFE) and other known CPE devices.

This attribute consists of the following sub-attributes: *sPortCount* and *sPortType[sPortCount]*.

Sub-attribute *aOnuSrvPortCapability.sPortCount*:

Syntax: Unsigned integer
Range: 0x00 to 0xFF
Remote access: Read-Only
Description: This sub-attribute indicates the number of service ports (including both physical and logical ports) supported by the ONU and listed in *aOnuSrvPortCapability* attribute.

Sub-attribute *aOnuSrvPortCapability.sPortType[sPortCount]*:

Syntax: Enumeration
Remote access: Read-Only
Description: This sub-attribute indicates the type of individual service ports supported on the ONU and devices connected to individual service ports (if present), including embedded (eSAFE) and other known CPE devices with values specified as follows:

- `unspecified:` service port is not connected to a known external or internal device
- `emta:` service port is connected to an embedded PacketCable Multimedia Terminal Adapter (eMTA)
- `estb_ip:` service port is connected to an IP interface of an embedded Set-Top Box (eSTB-IP)
- `estb_dsg:` service port is connected to an embedded Set-Top Box compliant with DOCSIS Set-Top Gateway specification (eSTB-DSG)
- `etea:` service port is connected to an embedded T1/E1 TDM Emulation Adapter (eTEA)
- `esg:` service port is connected to an embedded Security, Monitoring, and Automation Gateway (eSG)
- `erouter:` service port is connected to an embedded router (eRouter)
- `edva:` service port is connected to an embedded PacketCable 2.0 Digital Voice Adaptor (eDVA).
- `seb_estb_ip:` service port is connected to an embedded Set-Top Box with a Set-Top Extender Bridge (SEB eSTB-IP)
- `uni_port:` service port is connected to an external UNI port. This port type may be equivalent to CMCI, MN, or MI port types defined in [DPoE-ARCHv2.0]
- `other_internal:` service port is connected to non-eSAFE device and not exposed externally as a subscriber UNI
- `epta:` service port is connected to an embedded Performance Test Agent (ePTA)
- `eps:` service port is connected to an embedded CableHome Portal Services Logical Element (ePS)

Each service port is associated with only one *sPortType* sub-attribute. Types of eSAFE devices connected to service ports are defined in DPoE-SP-ARCH.

Sub-attribute *aOnuSrvPortCapability.sTypeInstance[sPortCount]*:

Syntax: Unsigned integer
Range: 0x00 to 0xFF
Remote access: Read-Only
Description: This sub-attribute indicates the instance of a service port with a given type. The first instance of a given type has value of 0. If more instances of the same type exists, the value of this sub-attribute is incremented by one for each subsequent instance.

The *aOnuSrvPortCapability* attribute is associated with the ONU object (see 14.4.1.1). The Variable Container TLV for the *aOnuSrvPortCapability* attribute shall be as specified in Table 14-70.

Table 14-70—*ONU Service Port Type* TLV (0xDB/0x00-10)

Size (octets)	Field (name)	Value	Notes
1	Branch	0xDB	Branch identifier
2	*Leaf*	0x00-10	Leaf identifier
1	*Length*	~~Varies~~2×N	The size of TLV fields following the `Length` field, equal to value of *sPortCount* sub-attribute
1	*PortType[0]*	Varies	Value of *sPortType[0]* sub-attribute, defined as follows: `unspecified`: 0x00 `emta`: 0x01 `estb_ip`: 0x02 `estb_dsg`: 0x03 `etea`: 0x04 `esg`: 0x05 `erouter`: 0x06 `edva`: 0x07 `seb_estp_ip`: 0x08 `uni_port`: 0x09 `other_internal`: 0x0C `epta`: 0x0D `eps`: 0x0E
1	*TypeInstance[0]*	Varies	Value of *sTypeInstance[0]* sub-attribute
…	…	…	..
1	*PortType[N−1]*	Varies	Value of *sPortType[N−1]* sub-attribute
1	*TypeInstance[N-1]*	Varies	Value of *sTypeInstance[N-1]* sub-attribute

14.4.1.22 Attribute *aOnuSrvPortDescription* (0xDB/0x00-17)

This attribute provides a description of the specific service port instance identified by a context object. For example, for the exposed physical ports (i.e., UNI ports) the description may represent the marking/label printed on the outside panel of the ONU.

Attribute *aOnuSrvPortDescription*:

Syntax: String
Remote access: Read-Only

Size (octets): 64 (max)
Description: This attribute represents the ASCII string (with the null terminator) carrying the description of the instance of the service port. The content of this atrribute is vendor-specific, but for every service port instance, the description string shall be unique.

The *aOnuSrvPortDescription* attribute is associated with the service port object (see 14.4.1.1). The Variable Container TLV for the *aOnuSrvPortDescription* attribute shall be as specified in Table 14-71.

Table 14-71—Service Port Description TLV (0xDB/0x00-17)

Size (octets)	Field (name)	Value	Notes
1	*Branch*	0xDB	Branch identifier
2	*Leaf*	0x00-17	Leaf identifier
1	*Length*	Varies	The size of TLV fields following the `Length` field
Varies	*SrvPortDescription*	Varies	Value of *aOnuSrvPortDescription* attribute.

14.4.2 Bridging

14.4.2.17 Attribute *aSrvPortType* (0xDB/0x01-21)

This attribute represents the set of service ports provisioned in the given ONU via *acConfigSrvPort* action (14.6.2.9). This attribute consists of the following sub-attributes: *sSrvPortCount*~~,~~ and *sSrvPortIndex[sSrvPortCount]*~~, *sSrvPortType[sSrvPortCount]*~~.

Sub-attribute *aSrvPortType.sSrvPortCount*:
Syntax: Unsigned integer
Range: 0x00 to 0xFF
Remote access: Read-Only
Description: This sub-attribute represents the number of service ports provisioned in the given ONU. Note that this value may be different from the value of *aOnuSrvPortCapability.sPortCount* sub-attribute, which represents the total number of service ports supported by the ONU.

Sub-attribute *aSrvPortType.sSrvPortIndex[sSrvPortCount]*:
Syntax: Unsigned integer
Range: 0x00 to 0xFE
Remote access: Read-Only
Description: This sub-attribute indicates the value of the service port index that has been added by *acConfigSrvPort* action. Valid service port index values range from 0x00 up to the maximum supported service port index in the given ONU (i.e., up to *aOnuSrvPortCapability.sPortCount* - 1, see 14.4.3.1.15).

The Variable Container TLV for the *aSrvPortType* attribute shall be as specified in Table 14-93. The *aSrvPortType* attribute is associated with either the ONU object or the srevice port object (see 14.4.1.1).

When the object is ONU, the Variable Container TLV for the *aSrvPortType* attribute contains information about all service ports provisioned in the given ONU. The order of service ports is implementation-dependent.

When the object is service port, the Variable Container TLV contains information about a single service port represented by the supplied object context.

Table 14-93—*Service Port Information* TLV (0xDB/0x01-21)

Size (octets)	Field (name)	Value	Notes
1	*Branch*	0xDB	Branch identifier
2	*Leaf*	0x01-21	Leaf identifier
1	*Length*	~~1 +~~ 23×*N*	The size of TLV fields following the `Length` field
1	*SrvPortIndex[0]*	Varies	Value of *sSrvPortIndex[0]* sub-attribute.
1	*SrvPortType[0]*	Varies	The type of the port with index *sSrvPortIndex[0]*. The value of this field is equal to *aOnuSrvPortCapability.sPortType[sSrvPortIndex[0]]* (see 14.4.3.1.15)
1	*TypeInstance[0]*	Varies	The instance of the port of the type *SrvPortType[0]*. The value of this field is equal to *aOnuSrvPortCapability.sTypeInstance [sSrvPortIndex[0]]* (see 14.4.3.1.15)
…	…	…	…
1	*SrvPortIndex[N-1]*	Varies	Value of *sSrvPortIndex[N-1]* sub-attribute (*N* = *sSrvPortCount*). This field is only present if the supplied object context is the ONU.
1	*SrvPortType[N-1]*	Varies	The type of the port with index *sSrvPortIndex[N-1]*. The value of this field is equal to *aOnuSrvPortCapability.sPortType [sSrvPortIndex[N-1]]* (see 14.4.3.1.15) This field is only present if the supplied object context is the ONU.
1	*TypeInstance[N-1]*	Varies	The instance of the port of the type *SrvPortType[N-1]*. The value of this field is equal to *aOnuSrvPortCapability.sTypeInstance [sSrvPortIndex[N-1]]* (see 14.4.3.1.15)