



TAPI UML Model

Version 2.3

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Document History

Version	Date	Description of Change
2.3 RC1	June 9, 2021	<p>Model Dump</p> <p><i>Gendoc generates documentation from Eclipse Modeling Framework (EMF) models using document templates in formats such as OpenOffice Writer (.odt), Microsoft Word (.docx), Microsoft Excel (.xlsx) and Microsoft Powerpoint (.pptx).</i></p>
2.3	August 9, 2021	<p>See <i>Changelog</i> and <i>TAPI213vs23</i> in https://github.com/OpenNetworkingFoundation/TAPI</p>

Some of the UML diagrams are very dense. To view them either zoom (sometimes to 400%) or open the corresponding UML diagram via Papyrus (for each figure with a UML diagram the UML model diagram name is provided under the figure in *italic* font).

In some diagrams the attributes representing an association end (the ones with underscore prefix, e.g. *lowerConnection*) are not shown for graphical reasons.

A paragraph is empty when the model does not include that UML element, e.g. Fault Management Model does not foresee neither *associations* nor *data types*.

1 Common Model

TapiCommon: This module contains TAPI Common Model definitions. Source: TapiCommon.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

1.1 Diagrams

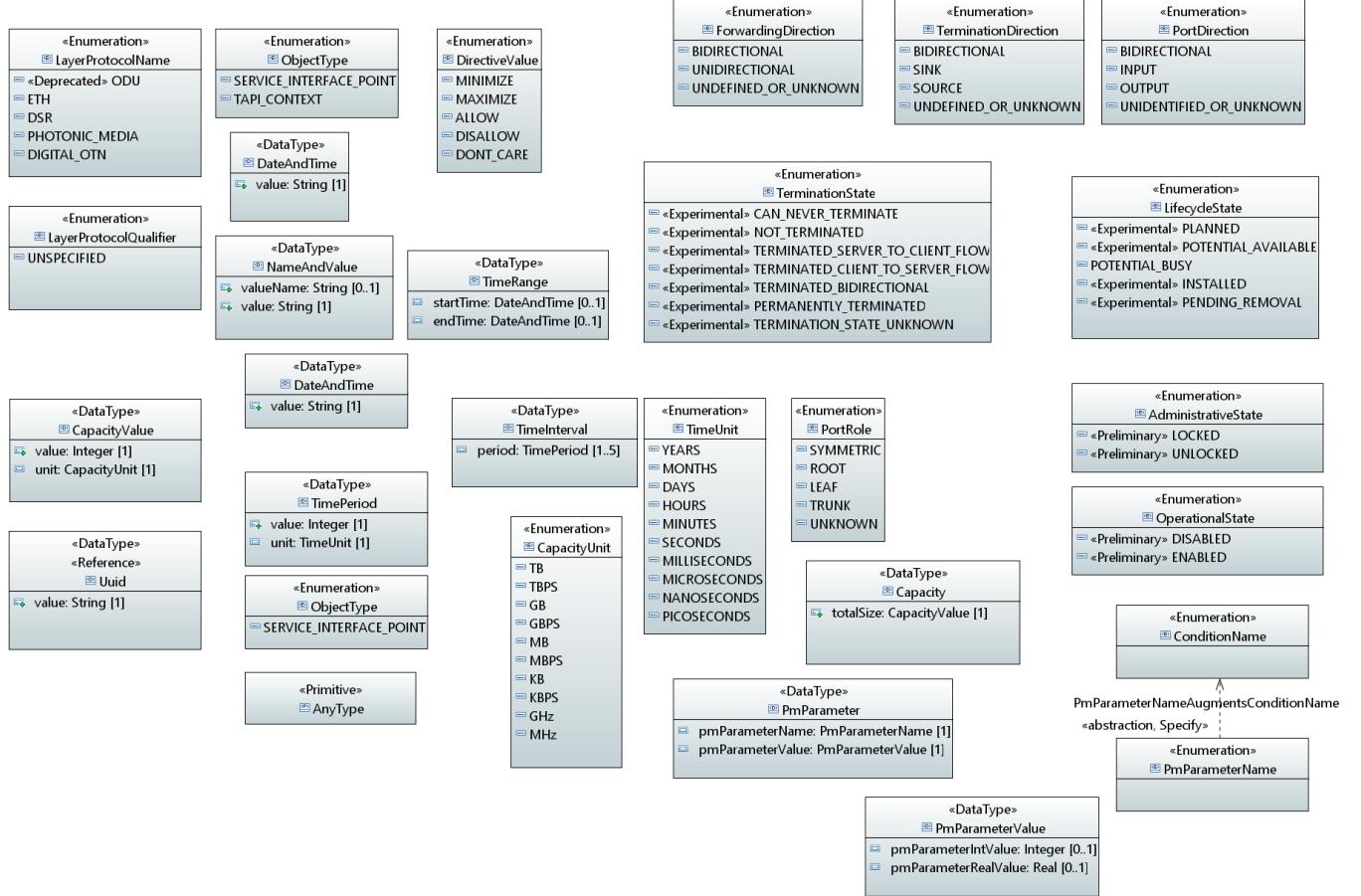
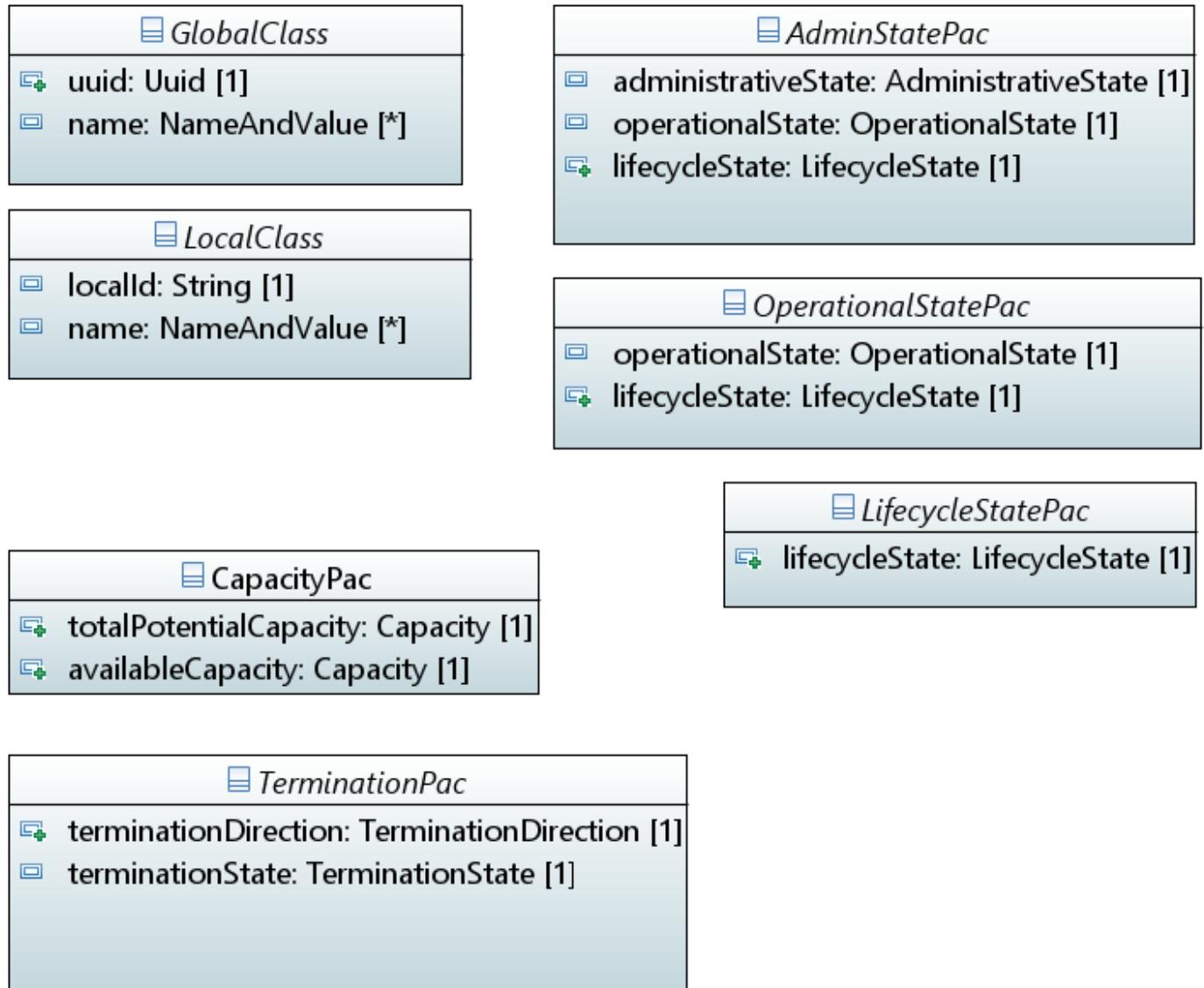
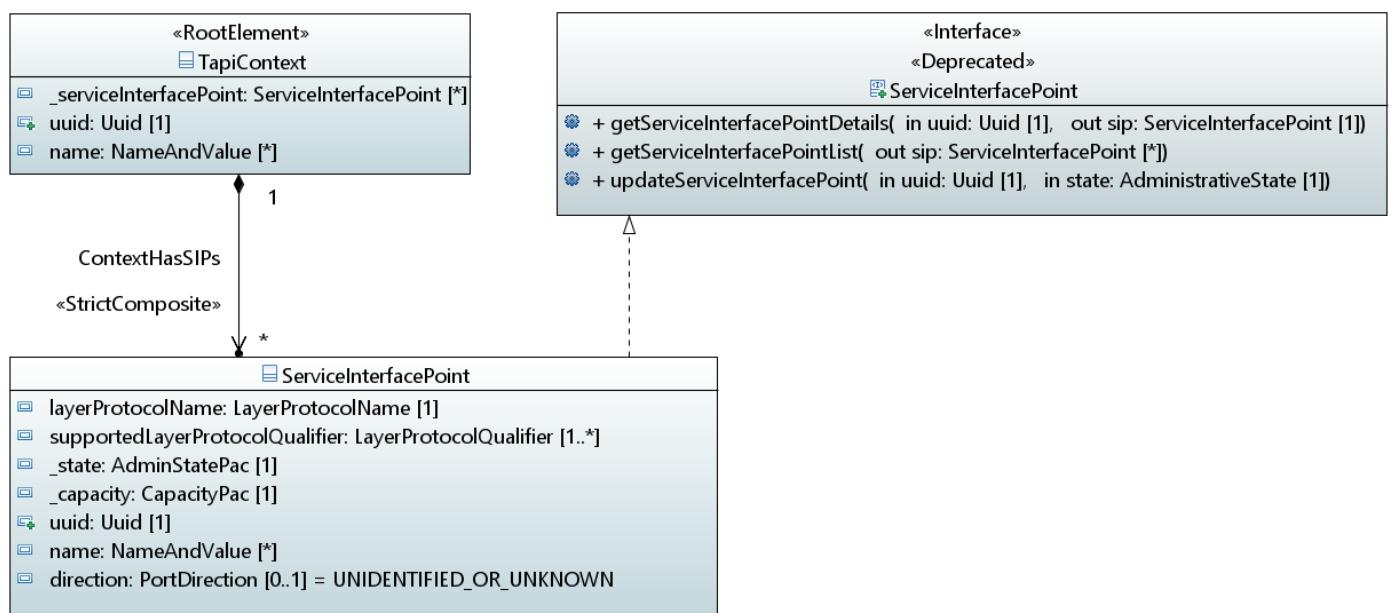


Figure 1 – *CommonDataTypes*

Figure 2 – *CommonPacs*Figure 3 – *Context*

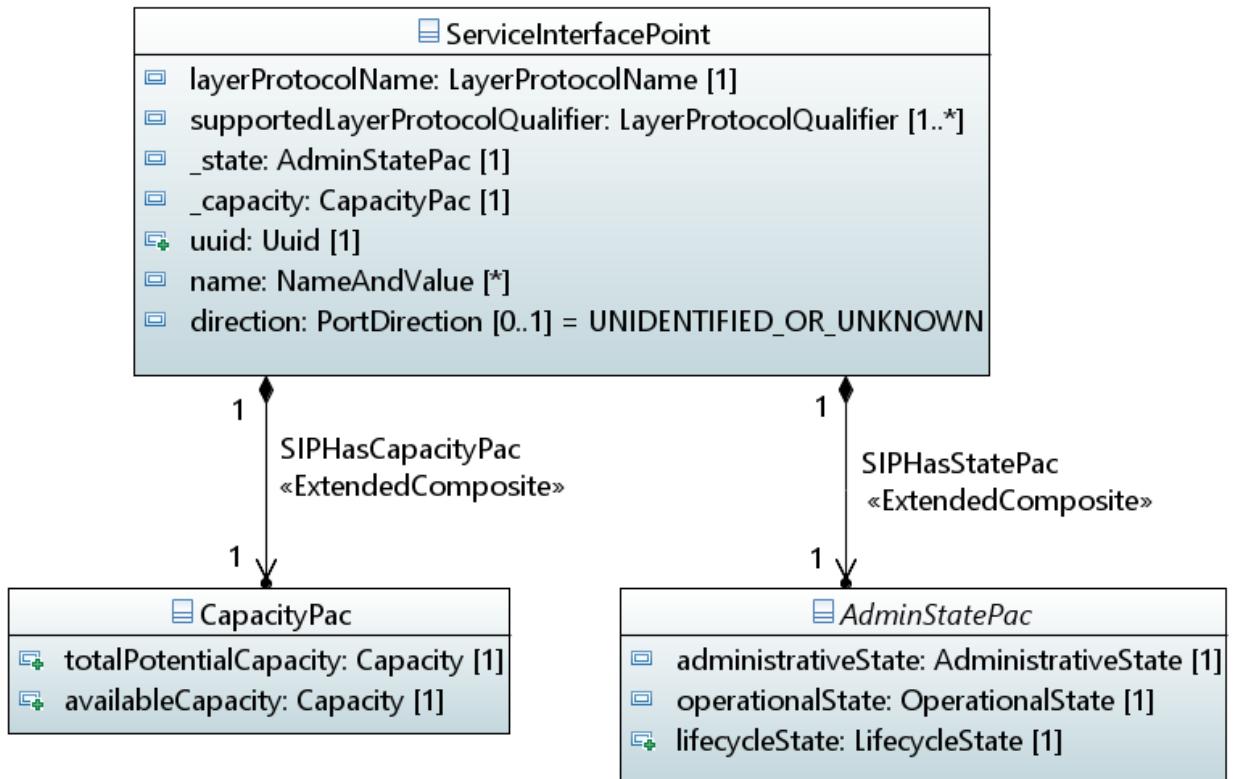


Figure 4 – ServicePointDetails

1.2 Classes

1.2.1 AdminStatePac

Provides state attributes that are applicable to an entity that can be administered. Such an entity also has operational and lifecycle aspects.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
administrativeState	AdministrativeState	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

Description:

The administration of managed objects operates independently of the operability and usage of managed objects and is described by the administrative state attribute. The administrative state is used by the operator to make a resource available for service, or to remove a resource from service.

Attribute Name	Type	Mult.	Access	Stereotypes
operationalState	OperationalState	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
	The operational state gives the information about the real capability of a resource to provide or not provide service.			
lifecycleState	LifecycleState	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
	Used to track the planned deployment, allocation to clients and withdrawal of resources.			

1.2.2 CapacityPac

Provides capacity related attributes.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
totalPotentialCapacity	Capacity	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
	An optimistic view of the capacity of the entity assuming that any shared capacity is available to be taken.			
availableCapacity	Capacity	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
	Capacity available to be assigned.			

1.2.3 GlobalClass

This class serves as the super class for all TAPI entities that can be directly retrieved by their ID. As such, these are first class entities and their ID is expected to be globally unique.

Applied stereotypes:

- OpenModelClass

- support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: yes – part: 1 ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

1.2.4 LifecycleStatePac

Provides state attributes for an entity that has lifecycle aspects only.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
lifecycleState	LifecycleState	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description: Used to track the planned deployment, allocation to clients and withdrawal of resources.			

1.2.5 LocalClass

This class serves as the super class for all TAPI entities that are ancillary of first class entities, i.e. their ID is not expected to be globally unique.

Applied stereotypes:

- OpenModelClass

- support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: yes – part: 1 ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
				Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
				Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

1.2.6 OperationalStatePac

Provides state attributes that are applicable to an entity that reflects operational aspects. Such an entity is expected to also have lifecycle aspects.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
operationalState	OperationalState	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
				Description: The operational state gives the information about the real capability of a resource to provide or not provide service.
lifecycleState	LifecycleState	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
				Description: Used to track the planned deployment, allocation to clients and withdrawal of resources.

1.2.7 ServiceInterfacePoint

A Service Interface Point represents the network-interface-facing aspects of the edge-port functions that access the forwarding capabilities provided by the Node. Hence it provides a limited, simplified view of interest to external clients (e.g. shared addressing, capacity, resource availability, etc.), that enable the clients to request connectivity without the need to understand the provider network internals.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The layer protocol of the ServiceInterfacePoint (SIP). Usage of layerProtocolName [>1] in the ServiceInterfacePoint should be considered experimental.				
supportedLayerProtocolQualifier	LayerProtocolQualifier	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The supported sub-layer(s) or rate(s) of Layer Protocol.				
_state	AdminStatePac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The ServiceInterfacePoint (SIP) status information.				
_capacity	CapacityPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The ServiceInterfacePoint (SIP) capacity information.				
direction	PortDirection	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The orientation of flow at the (conceptual) port of the potentially supported ConnectivityService(s). If direction attribute is missing the ServiceInterfacePoint (SIP) instance is to be intended as "BIDIRECTIONAL"				

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			

1.2.8 TapiContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, (i.e., encompassing a designated set of interconnected (virtual) network elements). This class includes the list of Service Interface Points. This class can be augmented by specific contexts, e.g. topology context.

Applied stereotypes:

- RootElement
 - name: invalid
 - multiplicity: invalid
 - description: invalid
- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_serviceInterfacePoint	ServiceInterfacePoint	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The ServiceInterfacePoint (SIP) instances belonging to this context.			

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

1.2.9 TerminationPac

Specifies the direction and layer termination state of a termination entity, e.g. CEP, NEP.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The overall directionality of the termination entity.			
terminationDirection	TerminationDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Indicates whether the layer is terminated and if so how.			
terminationState	TerminationState	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Indicates whether the layer is terminated and if so how.			

1.3 Associations

1.3.1 ContextHasSIPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serviceInterfacePoint	composite	Yes	ServiceInterfacePoint	0..*
context	none	No	TapiContext	1

1.3.2 SIPHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_capacity	composite	Yes	CapacityPac	1
serviceinterfacepoint	none	No	ServiceInterfacePoint	1

1.3.3 SIPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
_serviceEndPoint	none	No	ServiceInterfacePoint	1

1.4 Data Types

1.4.1 Capacity

Information on capacity of a particular entity.

Attribute Name	Type	Mult.	Access	Stereotypes
totalSize	CapacityValue	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Description:
Total capacity of the entity. In case of bandwidthProfile, this is expected to be the same as the committedInformationRate.

1.4.2 CapacityValue

The Capacity (Bandwidth) values that are applicable for digital layers.

Attribute Name	Type	Mult.	Access	Stereotypes
value	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Description:
The specific value of the capacity.

Attribute Name	Type	Mult.	Access	Stereotypes
unit	CapacityUnit	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: The specific unit of measurement of the capacity.			

1.4.3 DateAndTime

This primitive type defines the date and time according to ISO 8601 with the following structure: yyyyMMddhhmmss.s[Z|{+|-}HHMm] where: yyyy 0000..9999 year MM 01..12 month dd 01..31 day hh 00..23 hour mm 00..59 minute ss 00..60 second (60 for leap seconds) s .0...9 tenth of second (set to .0 if EMS or NE cannot support this granularity) Z Z indicates UTC (rather than local time) {+|-} + or - delta from UTC HH 00..23 time zone difference in hours Mm 00..59 time zone difference in minutes.

Attribute Name	Type	Mult.	Access	Stereotypes
value	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The specific value of the date and time.			

1.4.4 NameAndValue

A scoped name-value pair.

Attribute Name	Type	Mult.	Access	Stereotypes
valueName	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The name of the value. Optional, the value need not to have a name.			
value	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The specific value.			

1.4.5 PmParameter

PM metric name and value.

Attribute Name	Type	Mult.	Access	Stereotypes
pmParameterName	PmParameterName	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
	The name of the PM metric. Technology specific modules may define specific PM metrics.			
pmParameterValue	PmParameterValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	The value of the PM metric.			

1.4.6 PmParameterValue

PM metric value.

Attribute Name	Type	Mult.	Access	Stereotypes
pmParameterIntValue	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	Integer value, e.g. for counters.			
pmParameterRealValue	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	Real value, e.g. for gauges.			

1.4.7 TimeInterval

Interval of time, duration. Q.821: The Interval attribute type indicates the time between occurrences of a given activity described by an instance of the Management Operations Schedule object class. The interval can be specified in seconds, minutes, hours, or days.

Attribute Name	Type	Mult.	Access	Stereotypes
period	TimePeriod	1..5	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>The specific interval of time. Each TimePeriod occurrence specifies a duration in years, months, days, hours, minutes etc. The 1..5 occurrences complies with Q.821. ITU-T Q.821 (02/2000): TimeInterval ::= SEQUENCE { day [0] INTEGER (0..31) DEFAULT 0, hour [1] INTEGER (0..23) DEFAULT 0, minute [2] INTEGER (0..59) DEFAULT 0, second [3] INTEGER (0..59) DEFAULT 0, msec [4] INTEGER (0..999) DEFAULT 0 } Examples: A duration of 1 hour, 15 minutes and 30 seconds should be coded as 3 occurrences of TimePeriod: - HOURS; 1 - MINUTES; 15 - SECONDS; 30 A duration of 1550 milliseconds as two occurrences of TimePeriod: - SECONDS; 1 - MILLISECONDS: 550</p>				

1.4.8 TimePeriod

Period of time.

Attribute Name	Type	Mult.	Access	Stereotypes
value	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	<p>Description:</p> <p>The specific value of the time period.</p>			
unit	TimeUnit	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	<p>Description:</p> <p>The unit of measurement of the time period.</p>			

1.4.9 TimeRange

Range of time.

Attribute Name	Type	Mult.	Access	Stereotypes
startTime	DateAndTime	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	<p>Description:</p> <p>Date and time of the range start.</p>			
endTime	DateAndTime	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	<p>Description:</p> <p>Date and time of the range end.</p>			

1.4.10 Uuid

The universal ID value where the mechanism for generation is defined by some authority not directly referenced in the structure. UUID here uses string representation as defined in RFC 4122. The canonical representation

uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-' + '[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6

Attribute Name	Type	Mult.	Access	Stereotypes
value	String	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

1.5 Enumerations

1.5.1 AdministrativeState

The possible values of the administrativeState.

Contains Enumeration Literals:

- LOCKED:
 - Users are administratively prohibited from making use of the resource.
- UNLOCKED:
 - Users are allowed to use the resource.

1.5.2 CapacityUnit

Units of measurement of the capacity.

Contains Enumeration Literals:

- TB:
 - Indicates that the integer CapacityValue is in TeraBytes
- TBPS:
 - Indicates that the integer CapacityValue is in Terabit-per-second
- GB:
 - Indicates that the integer CapacityValue is in GigaBytes
- GBPS:
 - Indicates that the integer CapacityValue is in Gigabit-per-second
- MB:
 - Indicates that the integer CapacityValue is in MegaBytes
- MBPS:
 - Indicates that the integer CapacityValue is in Megabit-per-second
- KB:
 - Indicates that the integer CapacityValue is in KiloBytes
- KBPS:
 - Indicates that the integer CapacityValue is in Kilobit-per-second
- GHz:
 - Indicates that the integer CapacityValue is in gigahertz (spectrum)
- MHz:
 - Indicates that the integer CapacityValue is in megahertz (spectrum)

1.5.3 ConditionName

The Condition names. This extensible enumeration can be augmented with - specific PM metric names - specific alarm condition names, or alarm probable causes

Contains Enumeration Literals:

1.5.4 DirectiveValue

Types of directives.

Contains Enumeration Literals:

- MINIMIZE:
 - Directive to minimize.
- MAXIMIZE:
 - Directive to maximize.
- ALLOW:
 - Directive to allow.
- DISALLOW:
 - Directive to disallow
- DONT_CARE:
 - Directive is do not care.

1.5.5 ForwardingDirection

The directionality of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path.

Contains Enumeration Literals:

- BIDIRECTIONAL:
 - The fowarding entity supports BIDIRECTIONAL flows at all its (conceptual) ports (i.e. all ports have both an INPUT flow and an OUTPUT flow defined).
- UNIDIRECTIONAL:
 - The forwarding entity has (conceptual) ports that are either INPUT or OUTPUT. It has no BIDIRECTIONAL (conceptual) ports.
- UNDEFINED_OR_UNKNOWN:
 - Not a normal state. The system is unable to determine the correct value.

1.5.6 LayerProtocolName

Provides a controlled list of layer protocol names and indicates the naming authority. Note that it is expected that attributes will be added to this structure to convey the naming authority name, the name of the layer protocol using a human readable string and any particular standard reference.

Contains Enumeration Literals:

- ODU:
 - Models the ODU layer as per ITU-T G.872
- ETH:
 - Models the ETH layer as per ITU-T G.8010
- DSR:
 - Models a Digital Signal of an unspecified rate (Layer 1 coding functions). This value can be used when the intent is to represent a generic digital layer signal without making any statement on its format or overhead (processing) capabilities.

- PHOTONIC_MEDIA:
 - Models the optical signal and media channel layer as per ITU-T G.807
- DIGITAL_OTN:
 - Models the OTU/ODU OTN digital layers as per ITU-T G.872

1.5.7 LayerProtocolQualifier

This enumeration is used to qualify the sub-layers (if applicable) for a specific LayerProtocol. This extensible enumeration includes only the "UNSPECIFIED" entry in the common module and can be augmented with layer-specific values in the respective technology-specific modules.

Contains Enumeration Literals:

- UNSPECIFIED:
 - No sub-layer is specified.

1.5.8 LifecycleState

The possible values of the lifecycleState.

Contains Enumeration Literals:

- PLANNED:
 - The resource is planned but is not present in the network.
- POTENTIAL_AVAILABLE:
 - The supporting resources are present in the network but are shared with other clients; or require further configuration before they can be used; or both. When a potential resource is configured and allocated to a client it is moved to the INSTALLED state for that client. If the potential resource has been consumed (e.g. allocated to another client) it is moved to the POTENTIAL_BUSY state for all other clients.
- POTENTIAL_BUSY:
 - The supporting resources are present in the network but have been allocated to other clients.
- INSTALLED:
 - The resource is present in the network and is capable of providing the service expected.
- PENDING_REMOVAL:
 - The resource has been marked for removal.

1.5.9 ObjectType

The list of TAPI Global Object Class types on which Notification signals can be raised. This extensible enumeration includes only the "SERVICE_INTERFACE_POINT" entry in the common module and can be augmented with specific object types/classes in the other modules.

Contains Enumeration Literals:

- SERVICE_INTERFACE_POINT:
 - The ServiceInterfacePoint (SIP) class.
- TAPI_CONTEXT:
 - The TapiContext class.

1.5.10 OperationalState

The possible values of the operationalState.

Contains Enumeration Literals:

- DISABLED:
 - The resource is unable to meet the SLA of the user of the resource. If no (explicit) SLA is defined the resource is disabled if it is totally inoperable and unable to provide service to the user.
- ENABLED:
 - The resource is partially or fully operable and available for use.

1.5.11 PmParameterName

The PM metric names. This extensible enumeration can be augmented with specific PM metric names in the other modules.

Contains Enumeration Literals:

1.5.12 PortDirection

The orientation of flow at the (conceptual) port of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path, VirtualNetworkService.

Contains Enumeration Literals:

- BIDIRECTIONAL:
 - The Port has both an INPUT flow and an OUTPUT flow defined.
- INPUT:
 - The port only has definition for a flow into the forwarding entity, (i.e. an ingress flow of e.g. Link or Connection, hence an egress flow of NEP or CEP, CSEP etc.).
- OUTPUT:
 - The port only has definition for a flow out of the forwarding entity (i.e. an egress flow of e.g. Link or Connection, hence an ingress flow of NEP or CEP, CSEP etc.).
- UNIDENTIFIED_OR_UNKNOWN:
 - Not a normal state. The system is unable to determine the correct value.

1.5.13 PortRole

The role of a (conceptual) port of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path, VirtualNetworkService.

Contains Enumeration Literals:

- SYMMETRIC:
 - A port that can exchange flows (e.g. distinct packet flows) with any other port(s) in a forwarding entity. The SYMMETRIC role applies to point to point and multipoint to multipoint connection schemes.
- ROOT:
 - A port that can exchange flows (e.g. distinct packet flows) with any other port(s) in a forwarding entity. The ROOT role is unique to the Rooted Multipoint connection scheme.
- LEAF:
 - A port that can only exchange flows (e.g. distinct packet flows) with any other ROOT or TRUNK port(s) in a forwarding entity. The LEAF role is unique to the Rooted Multipoint connection scheme.
- TRUNK:
 - The TRUNK role is unique to the ENNI involved in a Rooted Multipoint connection scheme. It provides a way to extend the concept of ROOT and LEAF bidirectionally across the ENNI without having to create multiple ports (Leaves and Roots) and hairpinning from one to the other.
- UNKNOWN:

- Not a normal state. The system is unable to determine the correct value.

1.5.14 TerminationDirection

The directionality of a termination entity, e.g. CEP, NEP.

Contains Enumeration Literals:

- BIDIRECTIONAL:
 - A termination entity with both SINK and SOURCE flows.
- SINK:
 - The flow is up the layer stack from the server side to the client side. Considering an example of a termination function within the termination entity, a SINK flow: 1) will arrive at the base of the termination function (the server side) where it is essentially at an INPUT to the termination function, 2) then will be decoded and deconstructed, 3) then the relevant parts of the flow will be sent out of the termination function (the client side) where it is essentially at an OUTPUT from the termination function. A SINK termination function is one that only supports a SINK flow. A SINK termination function can be bound to an OUTPUT (conceptual) port of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path.
- SOURCE:
 - The flow is down the layer stack from the server side to the client side. Considering an example of a termination function within the termination entity, a SOURCE flow: 1) will arrive at the top of the termination function (the client side) where it is essentially at an INPUT to the termination function, 2) then will be assembled with various overheads etc and will be coded, 3) then the coded form of the assembly of flow will be sent out of the termination function (the server side) where it is essentially at an OUTPUT from the termination function. A SOURCE termination is one that only supports a SOURCE flow. A SOURCE termination can be bound to an INPUT (conceptual) port of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path.
- UNDEFINED_OR_UNKNOWN:
 - Not a normal state. The system is unable to determine the correct value.

1.5.15 TerminationState

Provides support for the range of behaviours and specific states that the termination function of a termination entity can take with respect to the termination of the signal.

Contains Enumeration Literals:

- CAN_NEVER_TERMINATE:
 - A non-flexible case that can never be terminated.
- NOT_TERMINATED:
 - A flexible termination that can terminate but is currently not terminated.
- TERMINATED_SERVER_TO_CLIENT_FLOW:
 - A flexible termination that is currently terminated for server to client flow only.
- TERMINATED_CLIENT_TO_SERVER_FLOW:
 - A flexible termination that is currently terminated for client to server flow only.
- TERMINATED_BIDIRECTIONAL:
 - A flexible termination that is currently terminated in both directions of flow.
- PERMANENTLY_TERMINATED:
 - A non-flexible termination that is always terminated (in both directions of flow for a bidirectional case and in the one direction of flow for both unidirectional cases).
- TERMINATION_STATE_UNKNOWN:
 - Not a normal state. The system is unable to determine the correct value.

1.5.16 TimeUnit

Units of measurement of the time.

Contains Enumeration Literals:

- YEARS:
- MONTHS:
- DAYS:
- HOURS:
- MINUTES:
- SECONDS:
- MILLISECONDS:
- MICROSECONDS:
- NANOSECONDS:
- PICOSECONDS:

1.6 Primitives

1.6.1 AnyType

This primitive represents the "any data" mechanism.

1.6.2 BinaryType

Represents any binary data, i.e., a sequence of octets. A binary type can be restricted by a length which defines the number of octets it contains.

1.6.3 MacAddress

Pattern: "[0-9a-fA-F]{2}(-[0-9a-fA-F]{2}){5}" Description: "The mac-address type represents a MAC address in the canonical format and hexadecimal format specified by IEEE Std 802. The canonical representation uses lowercase characters. The hexadecimal representation uses uppercase characters."

1.6.4 Timeticks

Type uint32. This type represents a non-negative integer that represents the time, modulo 2^{32} (4294967296 decimal), in hundredths of a second between two epochs.

2 Connectivity Model

TapiConnectivity: This module contains TAPI Connectivity Model definitions. Source: TapiConnectivity.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

2.1 Diagrams

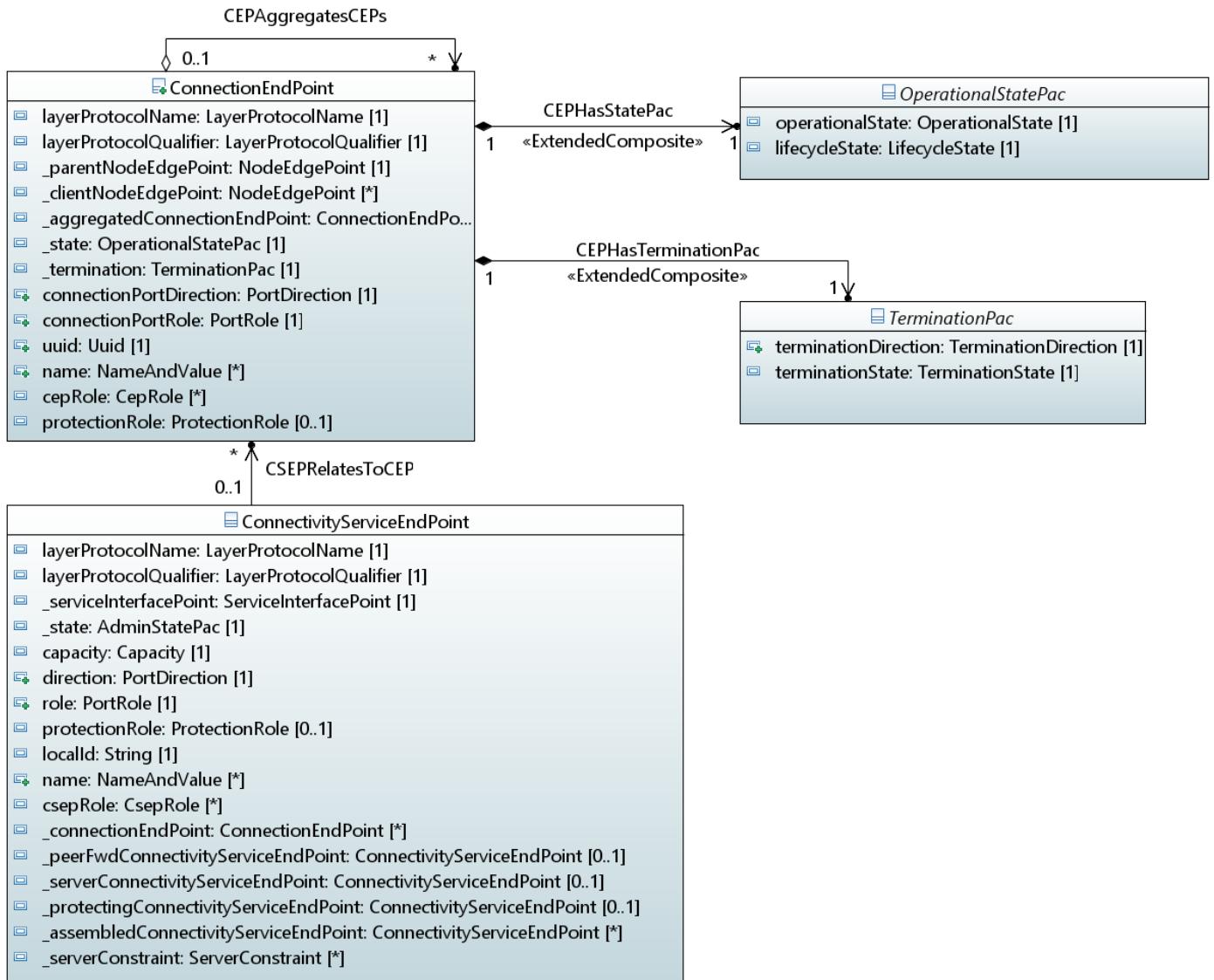


Figure 5 – **ConnectionEndPointDetails**

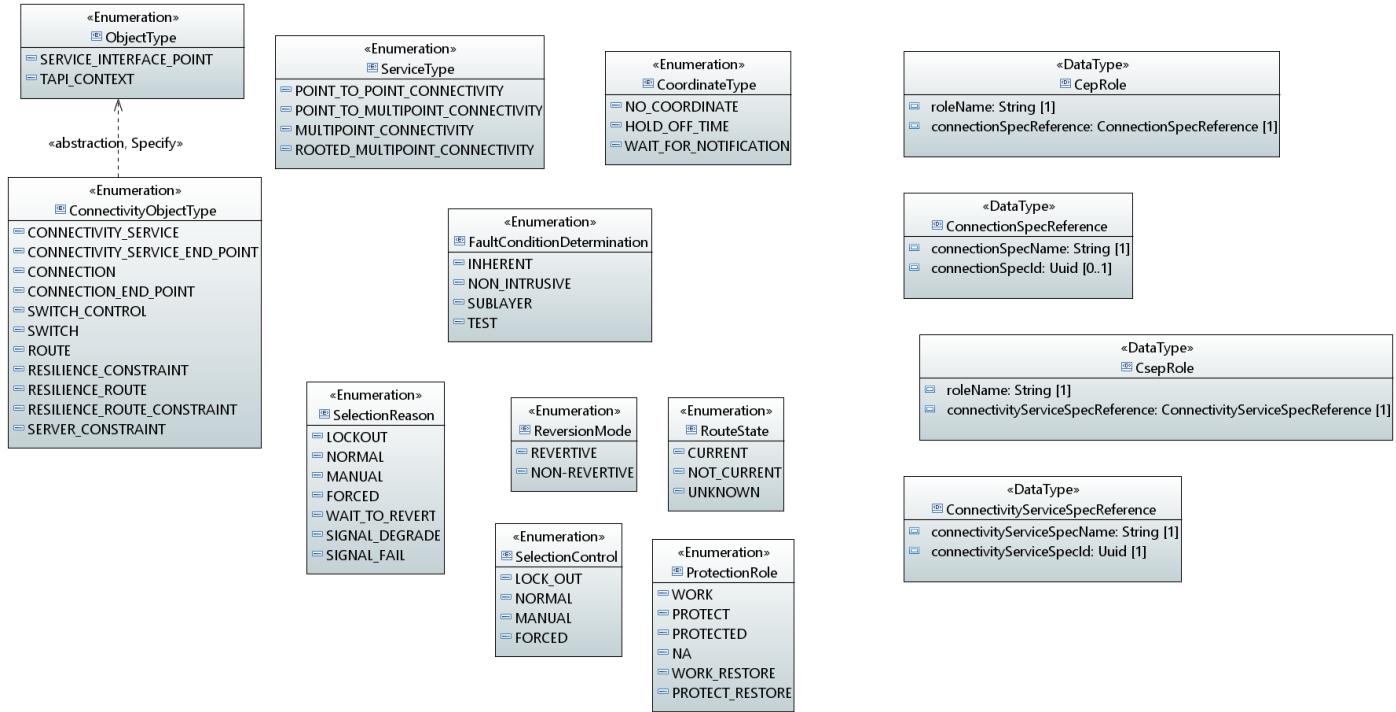


Figure 6 – ConnectivityDataTypes

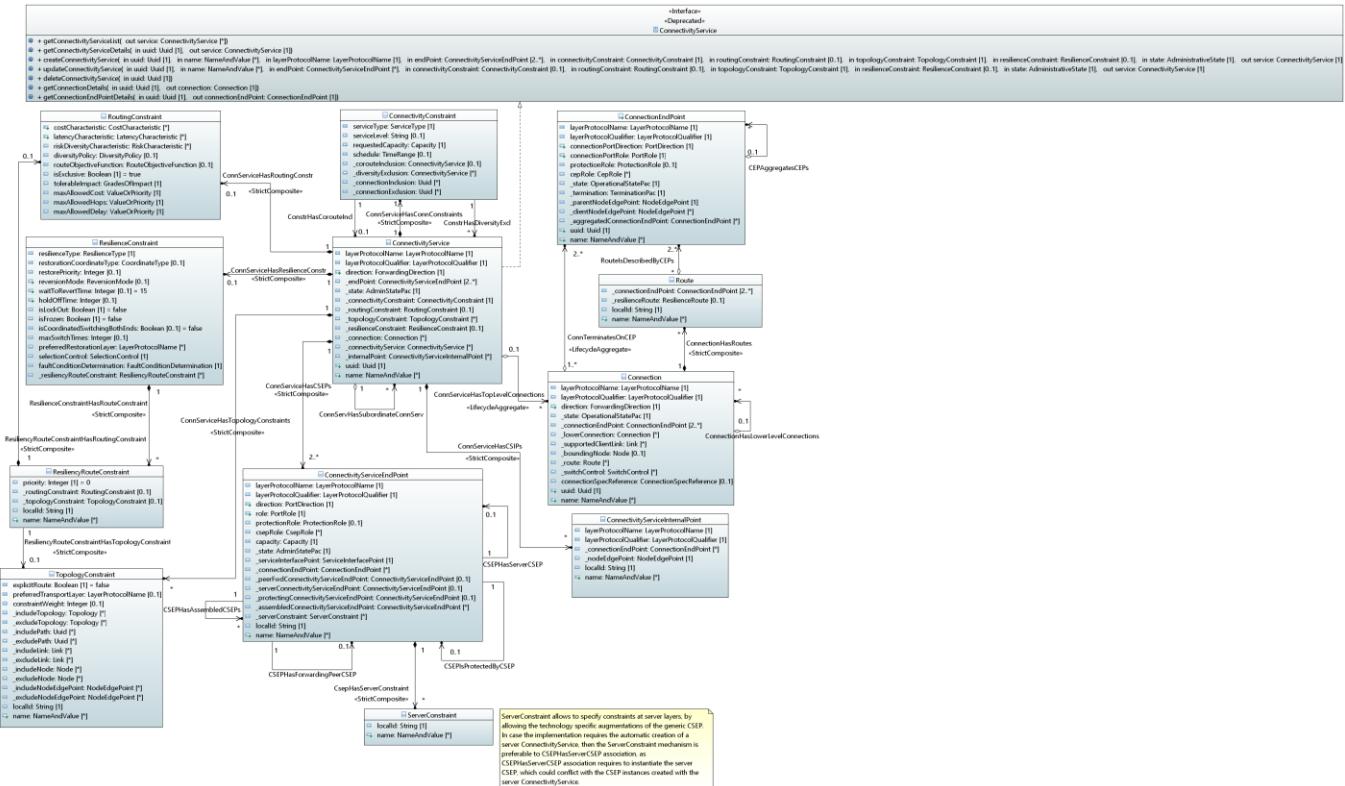


Figure 7 – ConnectivityServiceDetails

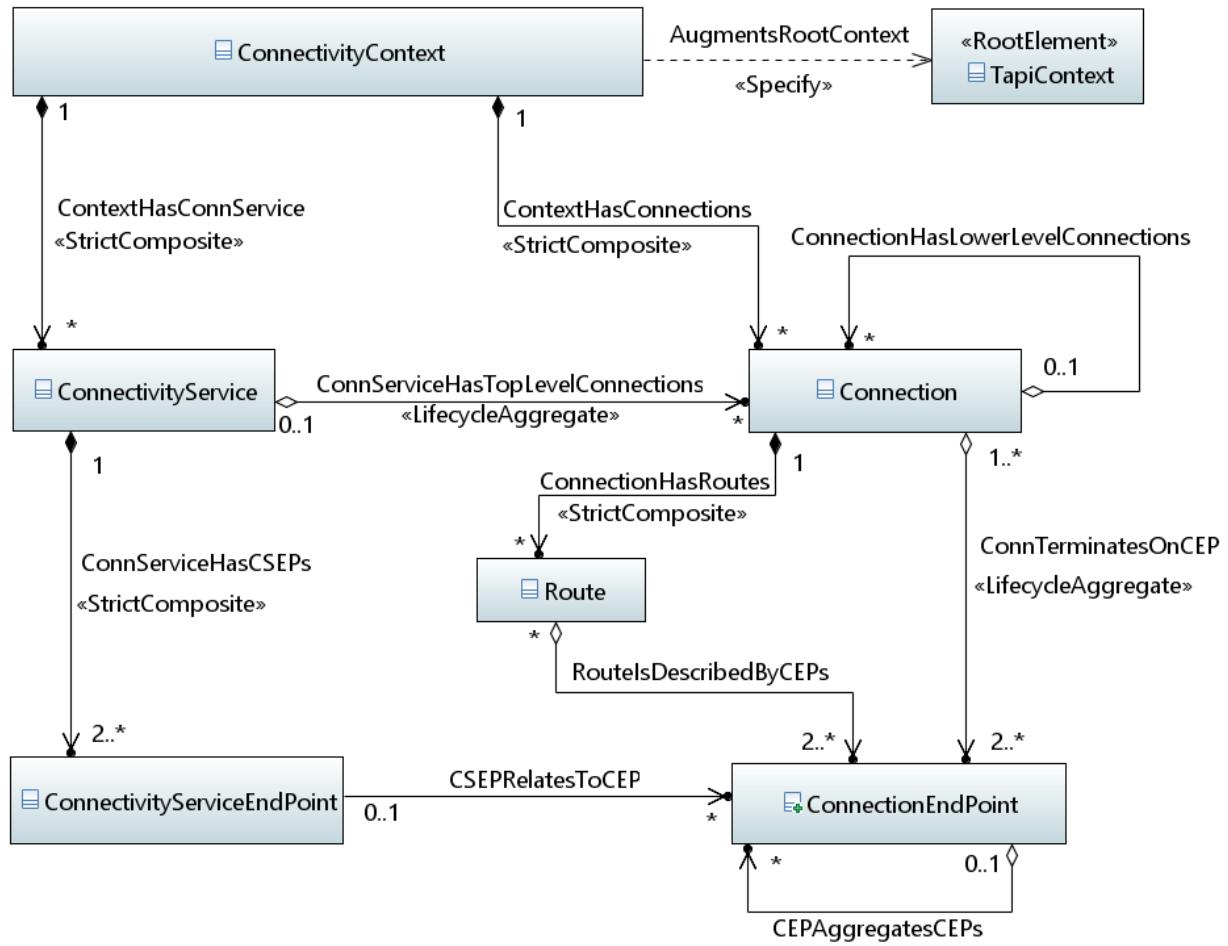


Figure 8 – ConnectivityServiceSkeleton

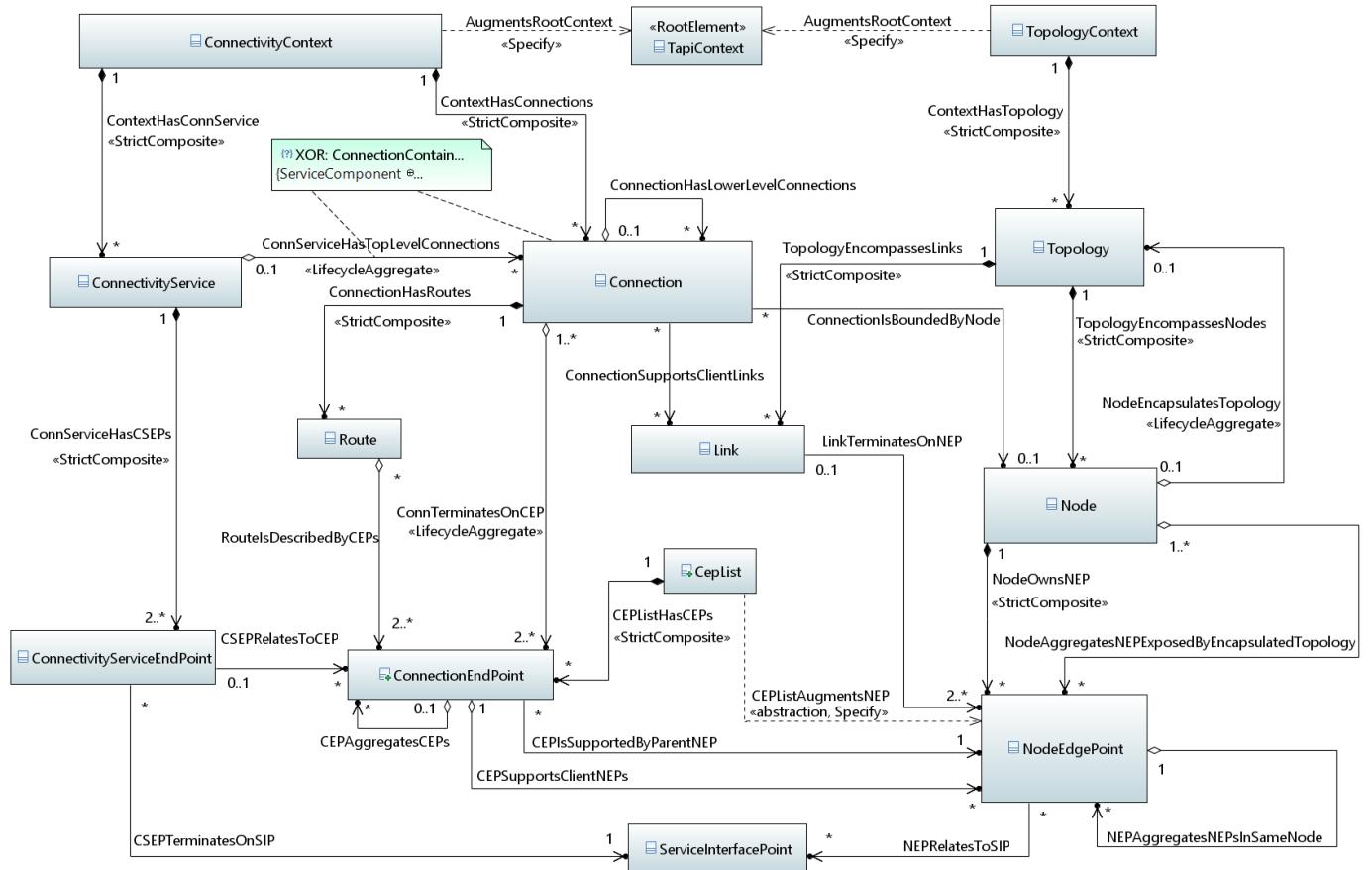
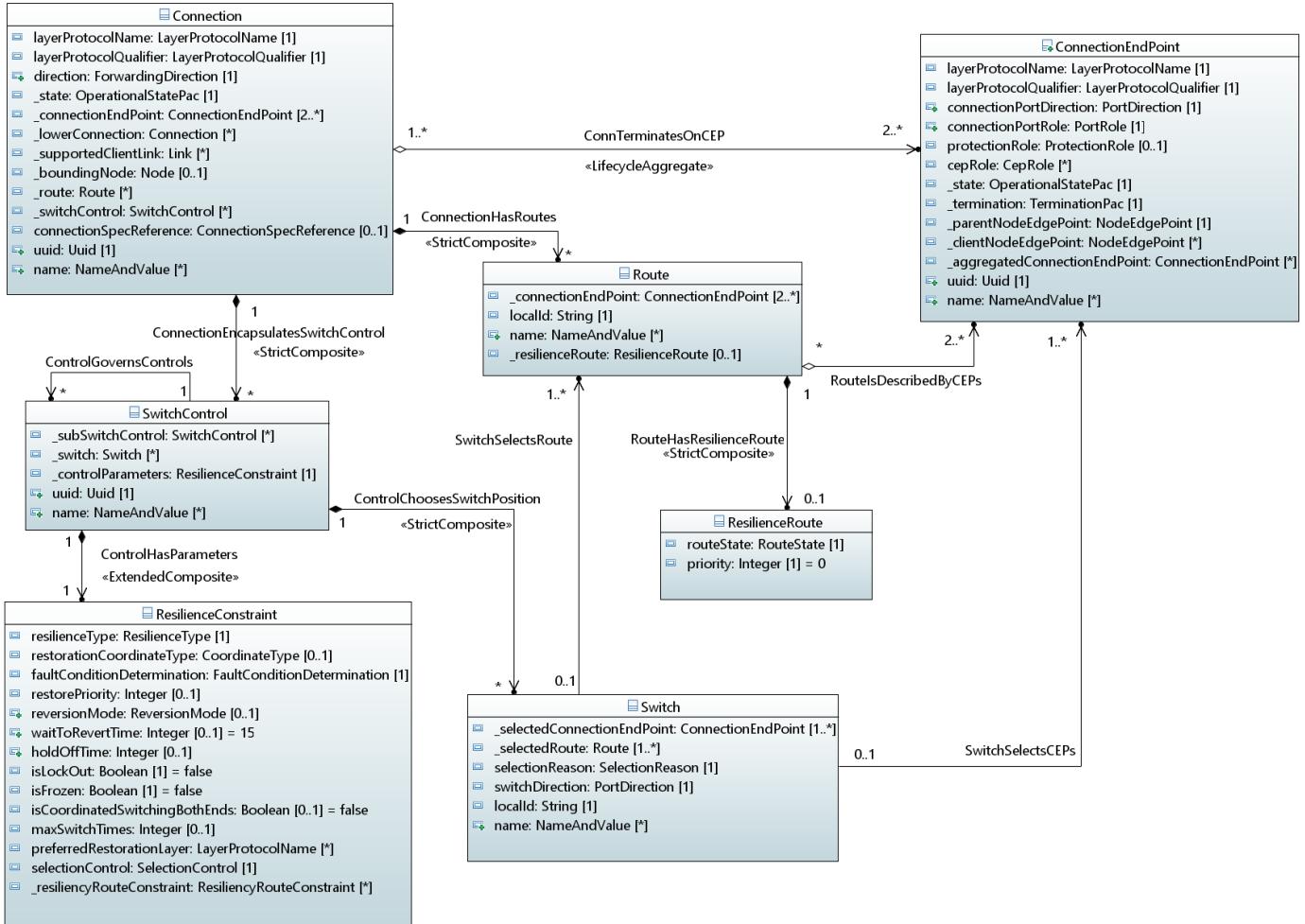


Figure 9 – ConnectivityTopologySkeleton**Figure 10 – Resilience**

2.2 Classes

2.2.1 CepList

This class provides the linkage between the NodeEdgePoint (NEP) instance and its supported ConnectionEndPoint CEP instances. The NEP class, which is defined in TapiTopology module, cannot directly include the reference to its CEPs, because CEP class is defined in another module, TapiConnectivity.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_connectionEndPoint	ConnectionEndPoint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: The list of supported ConnectionEndPoint (CEP) instances.				

2.2.2 Connection

A Connection represents an enabled (provisioned) potential for forwarding (of transport characteristic information including all circuit/packet forms) between two or more ConnectionEndPoint instances. The bounding Node of a Connection may be explicit or be conceptually implicit. The Connection is a container for provisioned connectivity that tracks the state of the allocated resources and is distinct from the ConnectivityService. At the lowest level of recursion, a Connection may represent a cross-connection in a switch matrix (i.e., a fabric) in an equipment.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: The layer protocol of the Connection.				
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
direction	ForwardingDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: The forwarding direction of the Connection.				
_state	OperationalStatePac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: The Connection status information.				

Attribute Name	Type	Mult.	Access	Stereotypes
_connectionEndPoint	ConnectionEndPoint	2..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The ConnectionEndPoint (CEP) instances of the Connection.				
_lowerConnection	Connection	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A Connection supports a recursive aggregation relationship such that the internal construction of a Connection can be exposed as multiple lower level Connection objects (partitioning). Aggregation is used as for the Node/Topology to allow changes in hierarchy. Connection aggregation reflects Node/Topology aggregation. Note that a cross-connection in a switch matrix (i.e., a fabric) is not necessarily the lowest level of Connection partitioning.				
_supportedClientLink	Link	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A Connection instance supports one or more Link instances. G.800: "The links in a client layer network are supported by trails in a server layer network".				
_boundingNode	Node	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A Connection may or may not be bounded by a Node, which defines the forwarding scope.				
_route	Route	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The Route instances of the Connection.				
_switchControl	SwitchControl	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The SwitchControl instances associated to the Connection.				
connectionSpecReference	ConnectionSpecReference	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Provides the reference to the spec that defines the connection type and cepRoles.			
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

2.2.3 ConnectionEndPoint

The ConnectionEndPoint (CEP) encapsulates information related to a Connection at the ingress/egress points of every Node that the Connection traverses in a Topology. The CEP includes the termination and adaptation functions of one or more transport layers (circuit and packet forms) plus the information of the (conceptual) port of associated Connection.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The layer protocol of the ConnectionEndPoint (CEP).			
layerProtocolQualifier	LayerProtocolQualifier	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The layer protocol qualifier of the ConnectionEndPoint (CEP).			

Attribute Name	Type	Mult.	Access	Stereotypes
connectionPortDirection	PortDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The orientation of flow at the (conceptual) port of the associated Connection.				
connectionPortRole	PortRole	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The role of the (conceptual) port of the associated Connection.				
protectionRole	ProtectionRole	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The protection role of the (conceptual) port of the associated Connection. It is recommended the alignment with the priority of ResilienceRoute.				
cepRole	CepRole	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Defines the role of the CEP in the context of the Connection spec. There may be many CEP role - Connection spec combinations for a particular CEP where each corresponds to a specific Connection associated with the CEP.				
_state	OperationalStatePac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The ConnectionEndPoint (CEP) status information.				
_termination	TerminationPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Termination direction and termination state of the ConnectionEndPoint (CEP).				
_parentNodeEdgePoint	NodeEdgePoint	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The supporting NodeEdgePoint (NEP) instance.				

Attribute Name	Type	Mult.	Access	Stereotypes
_clientNodeEdgePoint	NodeEdgePoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The supported NodeEdgePoint instance(s).				
_aggregatedConnectionEndPoint	ConnectionEndPoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A ConnectionEndPoint (CEP) instance may aggregate one or more other CEP instances for e.g. pooling purposes, when a set of CEP instances are equivalent for usage.				
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

2.2.4 ConnectivityConstraint

The connectivity constraints associated to a ConnectivityService instance.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
serviceType	ServiceType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The ConnectivityService type.			
serviceLevel	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: Class of Service Name. An abstract value the meaning of which is mutually agreed - typically represents metrics such as - Class of service, priority, resiliency, availability.			
requestedCapacity	Capacity	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The ConnectivityService capacity.			
schedule	TimeRange	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The ConnectivityService timing.			
_corouteInclusion	ConnectivityService	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The reference to another ConnectivityService instance for corouting purposes.			
_diversityExclusion	ConnectivityService	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The references to other ConnectivityService instances for routing diversity purposes.			
_connectionInclusion	Uuid	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: A ConnectivityService may use one or more existing Connections. A common traditional strategy is to set up 'stranded' connectivity in the core of the network as "express channels" (this is essentially a serial compound link, but can be treated as simple connections). A Connection inclusion capability allows for adoption of discovered Connections, i.e. will allow discovered Connections with no stated intent to be associated with an intent via the ConnectivityService. A ConnectivityService is requested with a Connection inclusion constraint that identifies a Connection (or chain of Connections) that is bounded by CEPs that each belong to a NEP that references a SIP that is referenced by a CSEP of the ConnectivityService such that all CSEPs are satisfied by CEPs of the existing Connection. The type is generic UUID given read/write constraints, the Connection is a readonly node.			

Attribute Name	Type	Mult.	Access	Stereotypes
_connectionExclusion	Uuid	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:		The list of Connection instances which shall not be used to implement the ConnectivityService. The type is generic UUID given read/write constraints, the Connection is a readonly node.		

2.2.5 ConnectivityContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, specifically regarding the connectivity description. An instance of this class includes its ConnectivityService and Connection object instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_connectivityService	ConnectivityService	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:		The included ConnectivityService instances.		
_connection	Connection	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:		The included Connection instances.		

2.2.6 ConnectivityService

A ConnectivityService represents an intent-like request for connectivity between two or more ConnectivityServiceEndPoint (CSEP) instances. The ConnectivityService is a container for connectivity request details and is distinct from the Connection(s) that realize the request.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
direction	ForwardingDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The forwarding direction of the ConnectivityService.			
_endPoint	ConnectivityServiceEndPoint	2..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The ConnectivityServiceEndPoint (CSEP) instances of the ConnectivityService.			
_state	AdminStatePac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The ConnectivityService status information.			
_connectivityConstraint	ConnectivityConstraint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The associated connectivity constraints.			
_routingConstraint	RoutingConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The associated routing constraints.			

Attribute Name	Type	Mult.	Access	Stereotypes
_topologyConstraint	TopologyConstraint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The associated topology constraints. Different instances of TopologyConstraints may be used to specify constraints at different layer networks.			
_resilienceConstraint	ResilienceConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	The associated resilience constraints.			
_connection	Connection	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	The Connection instance(s) tracking the state of the allocated resources for the support of the ConnectivityService.			
_connectivityService	ConnectivityService	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	Association to other ConnectivityService instances for complex connectivity provisioning.			
_internalPoint	ConnectivityServiceInternalPoint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	The ConnectivityServiceInternalPoint (CSIP) instances of the ConnectivityService.			
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.</p>				

2.2.7 ConnectivityServiceEndPoint

The ConnectivityServiceEndPoint (CSEP) encapsulates information related to a ConnectivityService at the ingress/egress points of that ConnectivityService.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
layerProtocolName	LayerProtocolName	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA 	
Description:					
The layer protocol of the ConnectivityServiceEndPoint (CSEP).					
layerProtocolQualifier	LayerProtocolQualifier	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA 	
Description:					
The layer protocol qualifier of the ConnectivityServiceEndPoint (CSEP).					
direction	PortDirection	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA 	
Description:					
The orientation of flow at the (conceptual) port of the associated ConnectivityService.					
role	PortRole	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA 	
Description:					
The role of the (conceptual) port of the associated ConnectivityService.					
protectionRole	ProtectionRole	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA 	

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The protection role of the (conceptual) port of the associated ConnectivityService. It is recommended the alignment with the priority of ResilienceRoute.			
csepRole	CsepRole	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Defines the role of the CSEP in the context of the Connectivity Service spec. There may be many CSEP role - CS spec combinations for a particular CSEP where each corresponds to a specific Connectivity Service associated with the CSEP.			
capacity	Capacity	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The ConnectivityServiceEndPoint (CSEP) capacity.			
_state	AdminStatePac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The ConnectivityServiceEndPoint (CSEP) status information.			
_serviceInterfacePoint	ServiceInterfacePoint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The supporting ServiceInterfacePoint (SIP) instance.			
_connectionEndPoint	ConnectionEndPoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The associated ConnectionEndPoint (CEP) instances.			
_peerFwdConnectivityServiceEndPoint	ConnectivityServiceEndPoint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The associated ConnectivityServiceEndPoint (CSEP) instance from forwarding perspective.			
_serverConnectivityServiceEndPoint	ConnectivityServiceEndPoint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The associated ConnectivityServiceEndPoint (CSEP) instance at a server layer protocol (qualifier).			
_protectingConnectivityServiceEndPoint	ConnectivityServiceEndPoint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The associated ConnectivityServiceEndPoint (CSEP) instance from resilience perspective.			
assembledConnectivityServiceEndPoint	ConnectivityServiceEndPoint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The associated ConnectivityServiceEndPoint (CSEP) instances from assembling perspective, e.g. in inverse multiplexing schemes.			
_serverConstraint	ServerConstraint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

2.2.8 ConnectivityServiceInternalPoint

Experimental class for complex/detailed provisioning schemes.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelAttribute
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The layer protocol of the ConnectivityServiceInternalPoint (CSIP).				
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The layer protocol qualifier of the ConnectivityServiceInternalPoint (CSIP).				
_connectionEndPoint	ConnectionEndPoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The associated ConnectionEndPoint (CEP) instances.				
_nodeEdgePoint	NodeEdgePoint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The supporting NodeEdgePoint (NEP) instance.				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

2.2.9 ResilienceConstraint

The parameters of a protection/restoration scheme of a ConnectivityService or Connection.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
resilienceType	ResilienceType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: The type of resiliency (protection/restoration).			
restorationCoordinateType	CoordinateType	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: The coordination mechanism between protection/restoration operations across multiple layers.			
faultConditionDetermination	FaultConditionDetermination	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: The types of the determinations of a fault condition on a serial compound link connection within the protected domain. Ref: G.808 Amendment 1 (03/2018)			
restorePriority	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: 0 highest priority, 1 lower, etc.			
reversionMode	ReversionMode	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Indicates whether the protection/restoration scheme is revertive or non-revertive.			
waitToRevertTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: If the protection/restoration scheme is revertive, this attribute specifies the time, in minutes, to wait after a fault clears on a higher priority (preferred) resource before reverting to the preferred resource.			

Attribute Name	Type	Mult.	Access	Stereotypes
holdOffTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the time, in milliseconds, between declaration of signal degrade or signal fail, and the initialization of the protection/restoration switching algorithm.				
isLockOut	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The resource is configured to temporarily not be available for use in the protection/restoration scheme(s) it is part of. This overrides all other control states including e.g. "forced". If the item is locked out then it cannot be used under any circumstances. Note: Only relevant when part of a protection/restoration scheme.				
isFrozen	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Temporarily prevents any switch action to be taken and, as such, freezes the current state of the protection/restoration scheme. Until the freeze is cleared, additional near-end external commands are rejected and fault condition changes and signalling (e.g, received APS messages) are ignored. All administrative controls of any aspect of the protection/restoration scheme are rejected.				
isCoordinatedSwitchingBothEnds	Boolean	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Is operating such that the switching at both ends of each flow across the resilient forwarding entity (e.g. ConnectivityService or Connection) is coordinated at both ingress and egress ends.				
maxSwitchTimes	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Used to limit the maximum switch times. When the impairment on preferred/intended resource disappears and traffic returns to the preferred/intended resource, switch counter reset.				
preferredRestorationLayer	LayerProtocolName	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Indicates which layer protocol this resilience parameters package is configured for.				

Attribute Name	Type	Mult.	Access	Stereotypes
selectionControl	SelectionControl	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Degree of administrative control applied to the switch selection.				
_resiliencyRouteConstraint	ResiliencyRouteConstraint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The associated constraints related to resiliency routes.				

2.2.10 ResilienceRoute

This object adds resilience and state attributes to the Route. When this object is not present, then the Route is intended as "current" Route of the Connection.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
routeState	RouteState	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Current information on the route selection.				
priority	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Value of 0 (zero) means "unspecified priority". Highest priority is 1, sometimes referred as "preferred" or "main" or "intended" route. 2 has lower priority than 1, 3 has lower priority than 2, etc. It is recommended the alignment with the protectionRole of CEP/CSEP.				

2.2.11 ResiliencyRouteConstraint

The constraints related to the Resiliency route.

Applied stereotypes:

- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA
- OpenModelClass
- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
				Description: Value of 0 (zero) means "unspecified priority". Highest priority is 1, sometimes referred as "preferred" or "main" or "intended" route. 2 has lower priority than 1, 3 has lower priority than 2, etc.
_routingConstraint	RoutingConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
				Description: The associated routing constraints.
_topologyConstraint	TopologyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
				Description: The associated topology constraints.
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: yes – part: 1 ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
				Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
				Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

2.2.12 Route

The Route of a Connection is modeled as a collection of ConnectionEndPoint (CEP) instances. The logical order of the ConnectionEndPoint (CEP) instances within the Route object can be inferred by the TAPI client by the knowledge of the topology information.

Applied stereotypes:

- OpenModelClass

- support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_connectionEndPoint	ConnectionEndPoint	2..*	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: The ConnectionEndPoint (CEP) instances composing the Route.			
_resilienceRoute	ResilienceRoute	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: Provides optional resilience and state attributes to the Route.			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: yes – part: 1 ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

2.2.13 ServerConstraint

This package allows augmentations for server layer technology specific constraints.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelAttribute
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

2.2.14 Switch

The class models the switched forwarding of traffic (traffic flow) between (conceptual) ports of resilient forwarding entities (e.g. resilient ConnectivityService, resilient Connection), these ports being mapped to ConnectionEndPoint (CEP) instances. A resilient forwarding entity may have two or more (conceptual) ports that provide alternative identical inputs/outputs, and one or more associated Switch instances to represent the alternative flow choices visible at the edge of the forwarding entity. The Switch instance represents and defines a protection switch structure conceptually encapsulated in the forwarding entity. The Switch instance essentially performs one of the functions of the Protection Group in a traditional model. It associates to 2 or more (conceptual) ports each playing the role of a Protection Unit. One or more protection, i.e. standby/backup, conceptual ports provide protection for one or more working (i.e. regular/main/preferred) ports where either protection or working can feed one or more protected port. The switch may be used in revertive or non-revertive (symmetric) mode. When in revertive mode it may define a waitToRestore time. It may be used in one of several modes including source switch, destination switched, source and destination switched, etc. (covering cases such as 1+1 and 1:1). It may be locked out (prevented from switching), force switched or manual switched. It will indicate switch state and change of state. The Switch can be switched away from all sources such that it becomes open and hence two coordinated switches can both feed the same (conceptual) port or CEP so long as at least one of the two is switched away from all sources (is "open"). The ability for a Switch to be "high impedance" allows bidirectional forwarding entities to be overlaid on the same bidirectional CEP where the appropriate control is enabled to prevent signal conflict. This ability allows multiple alternate routes to be present that otherwise would be in conflict.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_selectedConnectionEndPoint	ConnectionEndPoint	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The ConnectionEndPoint (CEP) instance(s) which is (are) currently selected for traffic flow.			
_selectedRoute	Route	1..*	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY• OpenInterfaceModelAttribute• AVC: NA
	Description: The Route instance(s) which is (are) currently selected for traffic flow.			
selectionReason	SelectionReason	1	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY• OpenInterfaceModelAttribute• AVC: NA
	Description: The reason for the current switch selection.			
switchDirection	PortDirection	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY• OpenInterfaceModelAttribute• AVC: NA
	Description: The orientation of flow at the (conceptual) port of the associated Connection. Indicates whether the Switch selects from ingress to the Connection or to egress of the Connection or both.			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: yes – part: 1• isInvariant: true• valueRange: no range constraint• support: MANDATORY• OpenInterfaceModelAttribute• AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY• OpenInterfaceModelAttribute• AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

2.2.15 SwitchControl

Represents the capability to control and coordinate Switch instances, to add/delete/modify Connections and to add/delete/modify CEPs so as to realize a protection scheme.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_subSwitchControl	SwitchControl	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Recursive association to represents hierarchical schemes.			
_switch	Switch	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The Switch instances composing the protection scheme.			
_controlParameters	ResilienceConstraint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The parameters of the protection scheme.			
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

2.3 Associations

2.3.1 CEPAggregatesCEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_aggregatedConnectionEndPoint	shared	Yes	ConnectionEndPoint	0..*
connectionendpoint	none	No	ConnectionEndPoint	0..1

2.3.2 CEPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	OperationalStatePac	1
connectionEndPoint	none	No	ConnectionEndPoint	1

2.3.3 CEPHasTerminationPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
termination	composite	Yes	TerminationPac	1
connectionendpoint	none	No	ConnectionEndPoint	1

2.3.4 CEPIsSupportedByParentNEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_parentNodeEdgePoint	none	Yes	NodeEdgePoint	1
connectionendpoint	none	No	ConnectionEndPoint	0..*

2.3.5 CEPListHasCEPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
connectionEndPoint	composite	Yes	ConnectionEndPoint	0..*
cepholder	none	No	CepList	1

2.3.6 CEPSupportsClientNEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
clientNodeEdgePoint	shared	Yes	NodeEdgePoint	0..*
connectionEndPoint	none	No	ConnectionEndPoint	1

2.3.7 CSEPHasAssembledCSEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_assembledConnectivityServiceEndPoint	none	Yes	ConnectivityServiceEndPoint	0..*
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.8 CSEPHasCapacityPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
capacity	composite	Yes	Capacity	1
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.9 CSEPHasForwardingPeerCSEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_peerFwdConnectivityServiceEndPoint	none	Yes	ConnectivityServiceEndPoint	0..1
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.10 CSEPHasServerCSEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serverConnectivityServiceEndPoint	none	Yes	ConnectivityServiceEndPoint	0..1
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.11 CSEPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.12 CSEPIsProtectedByCSEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_protectingConnectivityServiceEndPoint	none	Yes	ConnectivityServiceEndPoint	0..1
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.13 CSEPRelatesToCEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectionEndPoint	none	Yes	ConnectionEndPoint	0..*
_connectivityServiceEndPoint	none	No	ConnectivityServiceEndPoint	0..1

2.3.14 CSEPTerminatesOnSIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serviceInterfacePoint	none	Yes	ServiceInterfacePoint	1
_connServicePort	none	No	ConnectivityServiceEndPoint	0..*

2.3.15 CSITerminatesOnNEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nodeEdgePoint	none	Yes	NodeEdgePoint	1
connectivityserviceinternalpoint	none	No	ConnectivityServiceInternalPoint	0..*

2.3.16 ConnServHasSubordinateConnServ

Useful to specify constraints for subordinate Connectivity Services, e.g. in case of a protection scheme which does not span the whole parent Connectivity Service.

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectivityService	shared	Yes	ConnectivityService	0..*
connectivityservice	none	No	ConnectivityService	1

2.3.17 ConnServiceHasCSEPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_endPoint	composite	Yes	ConnectivityServiceEndPoint	2..*
service	none	No	ConnectivityService	1

2.3.18 ConnServiceHasCSIPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_internalPoint	composite	Yes	ConnectivityServiceInternalPoint	0..*
connectivityservice	none	No	ConnectivityService	1

2.3.19 ConnServiceHasConnConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
connectivityConstraint	composite	Yes	ConnectivityConstraint	1
service	none	No	ConnectivityService	1

2.3.20 ConnServiceHasResilienceConstr

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
resilienceConstraint	composite	Yes	ResilienceConstraint	0..1
connectivityservice	none	No	ConnectivityService	1

2.3.21 ConnServiceHasRoutingConstr

Test comment

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_routingConstraint	composite	Yes	RoutingConstraint	0..1
connectivityservice	none	No	ConnectivityService	1

2.3.22 ConnServiceHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
_service	none	No	ConnectivityService	1

2.3.23 ConnServiceHasTopLevelConnections

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connection	shared	Yes	Connection	0..*
_service	none	No	ConnectivityService	0..1

2.3.24 ConnServiceHasTopologyConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topologyConstraint	composite	Yes	TopologyConstraint	0..*
connectivityservice	none	No	ConnectivityService	1

2.3.25 ConnTerminatesOnCEP

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectionEndPoint	shared	Yes	ConnectionEndPoint	2..*
_connPort	none	No	Connection	1..*

2.3.26 ConnectionEncapsulatesSwitchControl

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_switchControl	composite	Yes	SwitchControl	0..*
connection	none	No	Connection	1

2.3.27 ConnectionHasLowerLevelConnections

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_lowerConnection	shared	Yes	Connection	0..*
connection	none	No	Connection	0..1

2.3.28 ConnectionHasRoutes

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_route	composite	Yes	Route	0..*
_connection	none	No	Connection	1

2.3.29 ConnectionHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	OperationalStatePac	1
_connection	none	No	Connection	1

2.3.30 ConnectionIsBoundedByNode

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_boundingNode	none	Yes	Node	0..1
connection	none	No	Connection	0..*

2.3.31 ConnectionSupportsClientLinks

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_supportedClientLink	none	Yes	Link	0..*
_supportingConnection	none	No	Connection	0..*

2.3.32 ConstrHasCorouteIncl

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_corouteInclusion	none	Yes	ConnectivityService	0..1
_connectivityConstraint	none	No	ConnectivityConstraint	1

2.3.33 ConstrHasDiversityExcl

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_diversityExclusion	none	Yes	ConnectivityService	0..*
_connectivityConstraint	none	No	ConnectivityConstraint	1

2.3.34 ContextHasConnService

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectivityService	composite	Yes	ConnectivityService	0..*
connectivitycontext	none	No	ConnectivityContext	1

2.3.35 ContextHasConnections

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connection	composite	Yes	Connection	0..*
connectivitycontext	none	No	ConnectivityContext	1

2.3.36 ControlChoosesSwitchPosition

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_switch	composite	Yes	Switch	0..*
switchcontrol	none	No	SwitchControl	1

2.3.37 ControlGovernsControls

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_subSwitchControl	none	Yes	SwitchControl	0..*
switchcontrol	none	No	SwitchControl	1

2.3.38 ControlHasParameters

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_controlParameters	composite	Yes	ResilienceConstraint	1
switchcontrol	none	No	SwitchControl	1

2.3.39 CsepHasServerConstraint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serverConstraint	composite	Yes	ServerConstraint	0..*
connectivityserviceendpoint	none	No	ConnectivityServiceEndPoint	1

2.3.40 ResilienceConstraintHasRouteConstraint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_resiliencyRouteConstraint	composite	Yes	ResiliencyRouteConstraint	0..*
resilienceconstraint	none	No	ResilienceConstraint	1

2.3.41 ResiliencyRouteConstraintHasRoutingConstraint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_routingConstraint	composite	Yes	RoutingConstraint	0..1
resiliencyrouteconstraint	none	No	ResiliencyRouteConstraint	1

2.3.42 ResiliencyRouteConstraintHasTopologyConstraint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topologyConstraint	none	Yes	TopologyConstraint	0..1
resiliencyrouteconstraint	none	No	ResiliencyRouteConstraint	1

2.3.43 RouteHasResilienceRoute

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_resilienceRoute	composite	Yes	ResilienceRoute	0..1
route	none	No	Route	1

2.3.44 RouteIsDescribedByCEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectionEndPoint	shared	Yes	ConnectionEndPoint	2..*
route	none	No	Route	0..*

2.3.45 SwitchSelectsCEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_selectedConnectionEndPoint	none	Yes	ConnectionEndPoint	1..*
switchgroup	none	No	Switch	0..1

2.3.46 SwitchSelectsRoute

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_selectedRoute	none	Yes	Route	1..*
switch	none	No	Switch	0..1

2.4 Data Types

2.4.1 CepRole

The role of the CEP in the context of the Connection spec.

Attribute Name	Type	Mult.	Access	Stereotypes
roleName	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The name of the CEP role in the context of the referenced spec.				
connectionSpecReference	ConnectionSpecReference	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The reference to the spec that defines the CEP role.				

2.4.2 ConnectionSpecReference

The reference to a spec for a type of Connection.

Attribute Name	Type	Mult.	Access	Stereotypes
connectionSpecName	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The name of the Connection spec. This can be used alone (with no spec reference) where there is only a paper spec.				
connectionSpecId	Uuid	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The reference to a formal spec. This reference need not be provided (e.g., where there is no formal machine interpretable spec for the type of Connection).				

2.4.3 ConnectivityServiceSpecReference

The reference to a spec for a type of Connectivity Service

Attribute Name	Type	Mult.	Access	Stereotypes
connectivityServiceSpecName	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The name of the Connectivity Service spec. This can be used alone (with no spec reference) where there is only a paper spec.				

Attribute Name	Type	Mult.	Access	Stereotypes
connectivityServiceSpecId	Uuid	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

2.4.4 CsepRole

The role of the CSEP in the context of the Connectivity Service spec.

Attribute Name	Type	Mult.	Access	Stereotypes
roleName	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
connectivityServiceSpecReference	ConnectivityServiceSpecReference	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

2.5 Enumerations

2.5.1 ConnectivityObjectType

The list of TAPI Connectivity Global Object Class types on which Notification signals can be raised.

Contains Enumeration Literals:

- CONNECTIVITY_SERVICE:
 - The ConnectivityService class.
- CONNECTIVITY_SERVICE_END_POINT:
 - The ConnectivityServiceEndPoint (CSEP) class.
- CONNECTION:
 - The Connection class.
- CONNECTION_END_POINT:
 - The ConnectionEndPoint (CEP) class.
- SWITCH_CONTROL:
 - The SwitchControl class.
- SWITCH:
 - The Switch class.
- ROUTE:
 - The Route class.
- RESILIENCE_CONSTRAINT:

- The ResilienceConstraint class.
- RESILIENCE_ROUTE:
 - The ResilienceRoute class.
- RESILIENCE_ROUTE_CONSTRAINT:
 - The ResilienceRouteConstraint class.
- SERVER_CONSTRAINT:
 - The ServerConstraint class.

2.5.2 CoordinateType

The types of coordination mechanisms between protection/restoration operations across multiple layers.

Contains Enumeration Literals:

- NO_COORDINATE:
 - No coordination, i.e. each layer network restores independently.
- HOLD_OFF_TIME:
 - The client layer network protection/restoration process is suspended for a certain time to possibly allow server layer network to protect/restore, avoiding useless multi-layer protection/restoration. It is assumed that the server layer network successful protection/restoration operation will inherently cancel the protection/restoration trigger at client layer.
- WAIT_FOR_NOTIFICATION:
 - The client layer network protection/restoration process is suspended until a notification is received from the server layer protection/restoration process. The notification should inform about the success or failure of the protection/restoration process at server layer.

2.5.3 FaultConditionDetermination

ITU-T G.808 Amendment 1 (03/2018) - 3.2.6.8 subnetwork connection protection: "Transport entity protection for the case where the transport entity is a subnetwork connection. The serial compound link connection within the subnetwork connection is protected by adding bridges and selectors in the connection functions at the edges of the protected domain and an additional serial compound link connection between these connection functions. The determination of a fault condition on a serial compound link connection within the protected domain can be performed as follows: (see enumeration entries)."

Contains Enumeration Literals:

- INHERENT:
 - Inherent monitored (/I): The fault condition status of each link connection is derived from the status of the underlying server layer trail.
- NON_INTRUSIVE:
 - Non-intrusive monitored (/N): Each serial compound link connection is extended with a non-intrusive monitoring termination sink function to derive the fault condition status from the traffic signal that is present.
- SUBLAYER:
 - Sublayer monitored (/S): Each serial compound link connection is extended with tandem connection monitoring or segment termination/adaptation functions to derive the fault condition status independent of the traffic signal present.
- TEST:
 - Test monitored (/T): Each serial compound link connection's fault condition status is derived from an additional monitored serial compound link connection transported via the same serial compound link.

2.5.4 ProtectionRole

The protection role of a (conceptual) port of a forwarding entity, e.g. Link, ConnectivityService, Connection, PathComputationService, Path, VirtualNetworkService.

Contains Enumeration Literals:

- WORK:
 - The unreliable/unprotected resource is assumed to be the preferred/intended/nominal/highest priority for usage.
- PROTECT:
 - The unreliable/unprotected resource is assumed to be the spare/protection of a higher priority resource.
- PROTECTED:
 - The resource which is reliable/protected/resilient by the protection/restoration scheme.
- NA:
 - Protection role not applicable to the resource.
- WORK_RESTORE:
 - The unreliable/unprotected resource is assumed to be the preferred/intended/nominal/highest priority for usage. Revertive behavior.
- PROTECT_RESTORE:
 - The unreliable/unprotected resource is assumed to be the spare/protection of a higher priority resource. Revertive behavior.

2.5.5 ReversionMode

The reversion mode associated with protection scheme.

Contains Enumeration Literals:

- REVERTIVE:
 - A Connection switched to a lower priority (non-preferred/spare/protection) resource will revert to a higher priority (preferred/intended/nominal) resource when that recovers (potentially after some wait-to-restore time).
- NON-REVERTIVE:
 - A Connection switched to a lower priority (non-preferred/spare/protection) resource will not revert to a higher priority (preferred/intended/nominal) resource when that recovers. This mode is typically applied when there is no ranking between the redundant resources.

2.5.6 RouteState

Potential Route states concerning the service support.

Contains Enumeration Literals:

- CURRENT:
 - The Route instance identified is the current Route, i.e., is the one that is active and selected to support service.
- NOT_CURRENT:
 - The Route instance is not the one supporting the service.
- UNKNOWN:
 - The Route state is unknown.

2.5.7 SelectionControl

Possible degrees of administrative control applied to the Route selection.

Contains Enumeration Literals:

- **LOCK_OUT:**
 - The resource is configured to temporarily not be available for use in the protection/restoration scheme(s) it is part of. This overrides all other protection/restoration control states including "forced". If the item is locked out then it cannot be used under any circumstances. Note: Only relevant when part of a protection/restoration scheme.
- **NORMAL:**
 - Remove of any previous administrative command.
- **MANUAL:**
 - The traffic is temporarily switched to the spare/protection resource, unless it is in a fault condition state. Note: Only relevant when part of a protection/restoration scheme.
- **FORCED:**
 - The traffic is temporarily switched to the spare/protection resource, regardless its fault condition state. Note: Only relevant when part of a protection/restoration scheme.

2.5.8 SelectionReason

The cause of the current Route selection.

Contains Enumeration Literals:

- **LOCKOUT:**
 - A "lockout" administrative command has been issued.
- **NORMAL:**
 - No administrative command currently issued.
- **MANUAL:**
 - A "manual" administrative command has been issued.
- **FORCED:**
 - A "forced" administrative command has been issued.
- **WAIT_TO_REVERT:**
 - The scheme is waiting for reversion to preferred/intended/nominal resource.
- **SIGNAL_DEGRADE:**
 - A "signal degrade" condition is active.
- **SIGNAL_FAIL:**
 - A "signal fail" condition is active.

2.5.9 ServiceType

List of simple connectivity types.

Contains Enumeration Literals:

- **POINT_TO_POINT_CONNECTIVITY:**
 - Point to point.
- **POINT_TO_MULTIPOINT_CONNECTIVITY:**
 - Point to multipoint.
- **MULTIPOINT_CONNECTIVITY:**
 - Multipoint to multipoint.
- **ROOTED_MULTIPOINT_CONNECTIVITY:**
 - Rooted multipoint.

2.6 Primitives

3 Digital Signal Rate Model

TapiDsr: This module contains TAPI Digital Signal Rate Model definitions. Source: TapiDsr.uml
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3.1 Diagrams

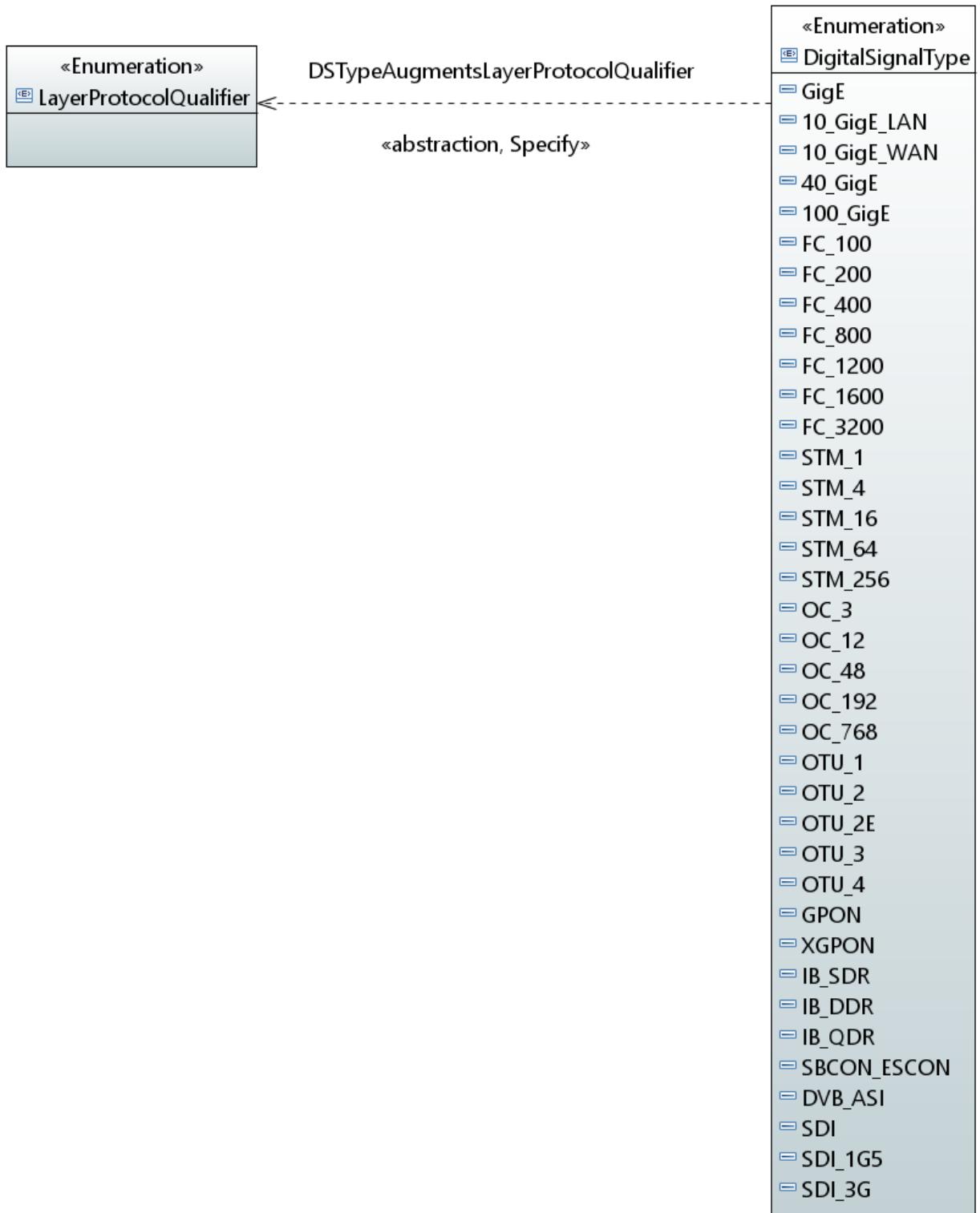


Figure 11 – *DsrTypes*

3.2 Classes

3.3 Associations

3.4 Data Types

3.5 Enumerations

3.5.1 DigitalSignalType

Contains Enumeration Literals:

- GigE:
- 10_GigE_LAN:
- 10_GigE_WAN:
- 40_GigE:
- 100_GigE:
- FC_100:
- FC_200:
- FC_400:
- FC_800:
- FC_1200:
- FC_1600:
- FC_3200:
- STM_1:
- STM_4:
- STM_16:
- STM_64:
- STM_256:
- OC_3:
- OC_12:
- OC_48:
- OC_192:
- OC_768:
- OTU_1:
- OTU_2:
- OTU_2E:
- OTU_3:
- OTU_4:
- GPON:
- XGPON:
- IB_SDR:
- IB_DDR:
- IB_QDR:
- SBCON_ESCON:
- DVB_ASI:
- SDI:
- SDI_1G5:
- SDI_3G:

3.6 Primitives

4 Equipment Model

TapiEquipment: This module contains TAPI Equipment Model definitions. Source: TapiEquipment.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

4.1 Diagrams

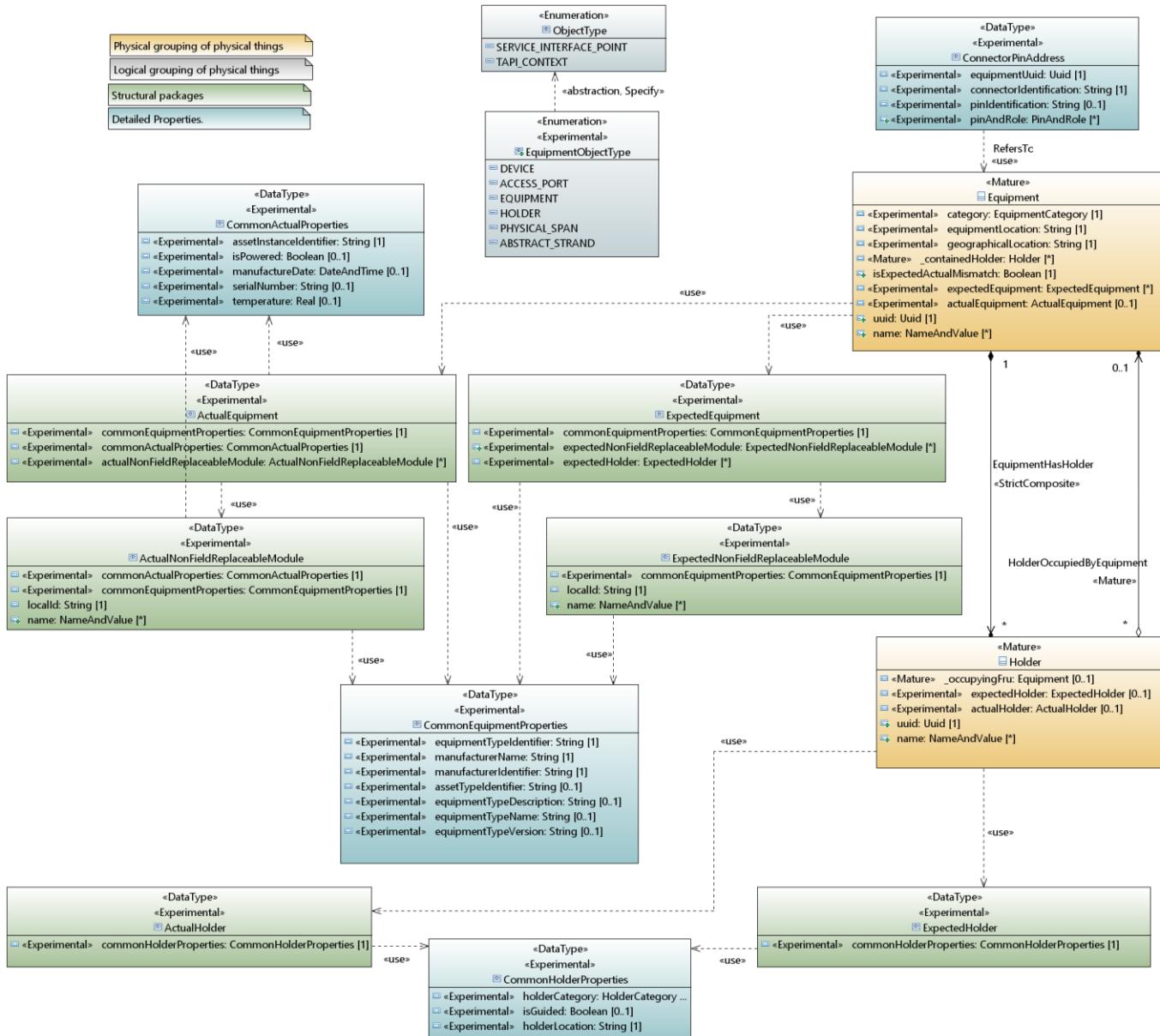
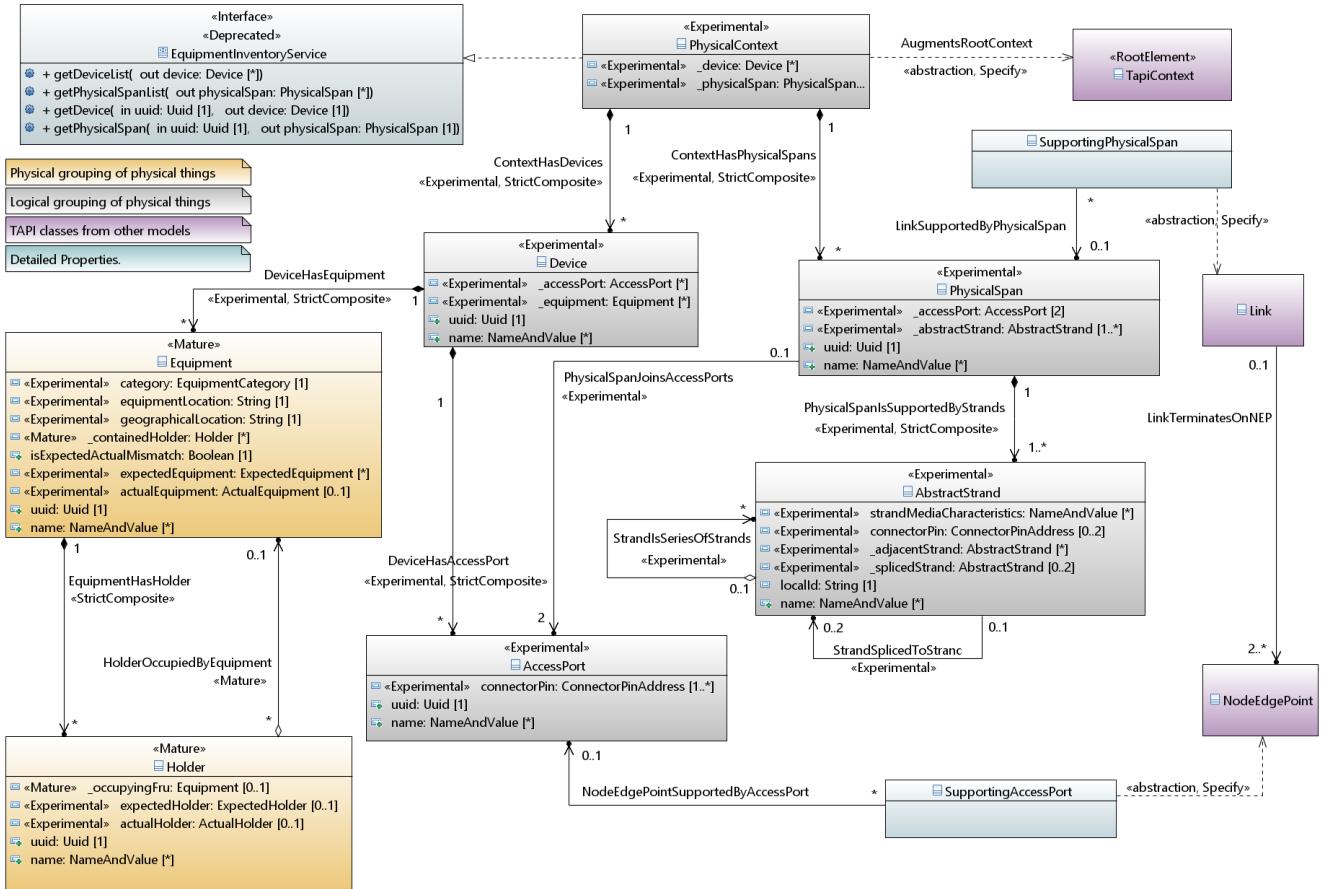


Figure 12 – *EquipmentDataTypes*

Figure 13 – *EquipmentModelDetail*

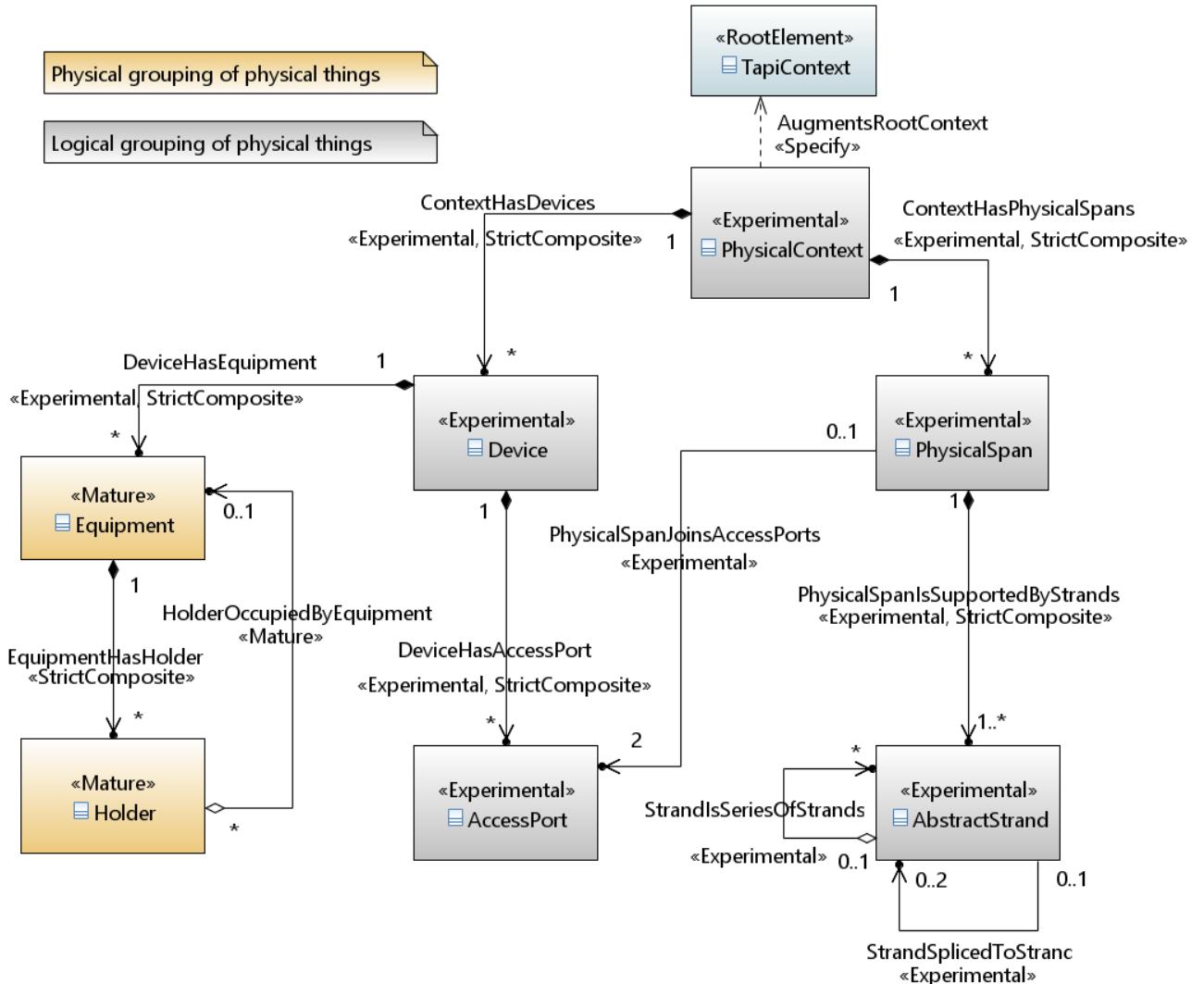


Figure 14 – *EquipmentPatternSkeleton*

4.2 Classes

4.2.1 AbstractStrand

This object represents an abstraction of one or more strands in series that provides sufficient detail to enable appropriate engineering. A strand represents a continuous long, thin piece of a medium such as glass fiber or copper wire. In this model a Strand: - a strand has two ends - a splice can only be between 2 strands. - the end of a strand may have a splice, a connector or be hidden - only one end can be hidden in an equipment - where a cable has more than two end each strand only goes between two of the ends This model does NOT account for multiple copper strands being spliced.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_adjacentStrand	AbstractStrand	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY
Description:				
_splicedStrand	AbstractStrand	0..2	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY
Description:				
connectorPin	ConnectorPinAddress	0..2	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY
Description:				
A strand can end on two or more Pins (usually 2 pins, but a strand may be spliced to split a signal). This model supports only 2 ended strands. A abstract strand may be spliced at both ends and hence have no direct relationship to pins or may be connected to pins at one or both ends. In the essential model these Pins would be on connectors that plug in to connectors on Equipments. The AbstractStrand is extended to the pins of the AccessPort which are the Pins on the Connectors of the Equipment. In some cases it may not be relevant to represent the pin detail and hence the reference is to a connector alone.				
strandMediaCharacteristics	NameAndValue	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY
Description:				
Relevant physical properties of the abstract strand.				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: yes – part: 1• isInvariant: true• valueRange: no range constraint• support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA• OpenModelAttribute• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

4.2.2 AccessPort

A group of pins that together support a signal group where any one pin removed from the group will prevent all signals of the signal group from flowing successfully. In some cases the AccessPort may simply reference a single connector (e.g., where the pin-connector association is simple such that the AccessPort references all pins of one connector).

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
connectorPin	ConnectorPinAddress	1..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The list of Pins that support the AccessPort.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

4.2.3 Device

A logical grouping of Equipments and AccessPorts that are closely located and form a support a coherent system of related functions.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_equipment	Equipment	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
_accessPort	AccessPort	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description:			
	UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

4.2.4 Equipment

Represents any relevant physical thing. Can be either field replaceable or not field replaceable. Note: The model is currently constrained to inside plant.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Mature
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_containedHolder	Holder	0..*	R	<p>Mature OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	References the Holder in an Equipment that is available to take other Equipments. For example: - Slot in a sub-rack - Slot in a Field Replaceable Unit that can take a small form-factor pluggable.			
category	EquipmentCategory	1	R	<p>Experimental OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	This attribute provides the identifier for the form of equipments regarded as having particular shared characteristics.			
equipmentLocation	String	1	R	<p>Experimental OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
geographicalLocation	String	1	R	<p>Experimental OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
isExpectedActualMismatch	Boolean	1	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
expectedEquipment	ExpectedEquipment	0..*	R	<p>Experimental OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes
actualEquipment	ActualEquipment	0..1	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

4.2.5 Holder

Represents a space in an equipment in which another equipment can be fitted in the field.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Mature
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_occupyingFru	Equipment	0..1	R	Mature OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	The FRU that is occupying the holder. A holder may be unoccupied. An FRU may occupy more than one holder (using or blocking are intentionally not distinguished here).			

Attribute Name	Type	Mult.	Access	Stereotypes
expectedHolder	ExpectedHolder	0..1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
actualHolder	ActualHolder	0..1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

4.2.6 PhysicalContext

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_device	Device	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
_physicalSpan	PhysicalSpan	0..*	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			

4.2.7 PhysicalSpan

An adjacency between AccessPorts. The adjacency is supported by a group of strands between pins of the AccessPorts. This is a physical abstraction.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
_accessPort	AccessPort	2	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
_abstractStrand	AbstractStrand	1..*	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	Both the serial segments that form an end-end strand and the parallel end-end strands.			
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description:			
	UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			

Attribute Name	Type	Mult.	Access	Stereotypes
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:		List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.		

4.2.8 SupportingAccessPort

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_accessPort	AccessPort	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				

4.2.9 SupportingPhysicalSpan

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_physicalSpan	PhysicalSpan	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				

4.3 Associations

4.3.1 ContextHasDevices

Applied stereotypes:

- Experimental
- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_device	composite	Yes	Device	0..*
tapiphysicalcontext	none	No	PhysicalContext	1

4.3.2 ContextHasPhysicalSpans

Applied stereotypes:

- Experimental
- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_physicalSpan	composite	Yes	PhysicalSpan	0..*
tapiphysicalcontext	none	No	PhysicalContext	1

4.3.3 DeviceHasAccessPort

Applied stereotypes:

- Experimental
- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_accessPort	composite	Yes	AccessPort	0..*
device	none	No	Device	1

4.3.4 DeviceHasEquipment

Applied stereotypes:

- Experimental
- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_equipment	composite	Yes	Equipment	0..*
device	none	No	Device	1

4.3.5 EquipmentHasHolder

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_containedHolder	composite	Yes	Holder	0..*
equipment	none	No	Equipment	1

4.3.6 HolderOccupiedByEquipment

Applied stereotypes:

- Mature

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_occupyingFru	shared	Yes	Equipment	0..1
occupiedHolder	none	No	Holder	0..*

4.3.7 LinkSupportedByPhysicalSpan

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_physicalSpan	none	Yes	PhysicalSpan	0..1
supportingphysicalspan	none	No	SupportingPhysicalSpan	0..*

4.3.8 NodeEdgePointSupportedByAccessPort

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_accessPort	none	Yes	AccessPort	0..1
supportingaccessport	none	No	SupportingAccessPort	0..*

4.3.9 PhysicalSpanIsSupportedByStrands

Applied stereotypes:

- Experimental
- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_abstractStrand	composite	Yes	AbstractStrand	1..*
physicalspan	none	No	PhysicalSpan	1

4.3.10 PhysicalSpanJoinsAccessPorts

Applied stereotypes:

- Experimental

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_accessPort	none	Yes	AccessPort	1
parallelstrandspan	none	No	PhysicalSpan	0..1

4.3.11 StrandIsSeriesOfStrands

Applied stereotypes:

- Experimental

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_adjacentStrand	shared	Yes	AbstractStrand	0..*
abstractstrand	none	No	AbstractStrand	0..1

4.3.12 StrandSplicedToStrand

Applied stereotypes:

- Experimental

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_splicedStrand	none	Yes	AbstractStrand	0..2
abstractstrand	none	No	AbstractStrand	0..1

4.4 Data Types

4.4.1 ActualEquipment

The equipment that is actually present in the physical network. It will expose all dynamic properties and some critical static properties.

Attribute Name	Type	Mult.	Access	Stereotypes
commonEquipmentProperties	CommonEquipmentProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
commonActualProperties	CommonActualProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
actualNonFieldReplaceableModule	ActualNonFieldReplaceableModule	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				

4.4.2 ActualHolder

A holder in the ActualEquipment.

Attribute Name	Type	Mult.	Access	Stereotypes
commonHolderProperties	CommonHolderProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				

4.4.3 ActualNonFieldReplaceableModule

A structure that represents an actual equipment that cannot be replaced in the field. Is simply a subordinate part of an ActualEquipment (FRU). Does not have any exposed holders (any associated holders are assumed to belong to the containing FRU). Does not have any connectors (any associated connectors are assumed to belong to the containing FRU).

Attribute Name	Type	Mult.	Access	Stereotypes
commonActualProperties	CommonActualProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
commonEquipmentProperties	CommonEquipmentProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

4.4.4 CommonActualProperties

Properties common to actual Equipment.

Attribute Name	Type	Mult.	Access	Stereotypes
assetInstanceIdentifier	String	1	RW	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute represents the asset identifier of this instance from the manufacturer's perspective.				
isPowered	Boolean	0..1	RW	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The state of the power being supplied to the equipment. Note that this attribute summarizes the power state. Full details on the actual power system would be provided from a number of PC instances representing the relevant parts of the Power function (e.g. different voltage supplies).			
manufactureDate	DateAndTime	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: This attribute represents the date on which this instance is manufactured.			
serialNumber	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: This attribute represents the serial number of this instance.			
temperature	Real	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The measured temperature of the Equipment.			

4.4.5 CommonEquipmentProperties

Properties common to all aspects of Equipment.

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The state of the power being supplied to the equipment. Note that this attribute summarizes the power state. Full details on the actual power system would be provided from a number of PC instances representing the relevant parts of the Power function (e.g. different voltage supplies).			
assetTypeIdentifier	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Represents the invariant properties of the equipment asset allocated by the operator that define and characterize the type.			
equipmentTypeDescription	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Text describing the type of Equipment.			

Attribute Name	Type	Mult.	Access	Stereotypes
equipmentTypeIdentifier	String	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute identifies the part type of the equipment.				
equipmentTypeName	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute identifies the type of the equipment.				
equipmentTypeVersion	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute identifies the version of the equipment.				
manufacturerIdentifier	String	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The formal unique identifier of the manufacturer.				
manufacturerName	String	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The formal name of the manufacturer of the Equipment.				

4.4.6 CommonHolderProperties

Properties common to all aspects of Holder.

Attribute Name	Type	Mult.	Access	Stereotypes
holderCategory	HolderCategory	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The type of holder.			
isGuided	Boolean	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: This attribute indicates whether the holder has guides that constrain the position of the equipment in the holder or not.			
holderLocation	String	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The relative position of the holder in the context of its containing equipment along with the position of that containing Equipment (and further recursion).			

4.4.7 ConnectorPinAddress

The identification of the location of the Connector and/or Pin.

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Identification of the Connector in the context of the referenced Equipment.			
connectorIdentification	String	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 2 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Where relevant, identification of the Pin in the context of the connector. Where the whole connector is used, then individual Pins need not be identified. Simple alternative to pinAndRole.			
pinIdentification	String	0..1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 3 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Reference to the Equipment that is fitted with the Connector/Pin.			
equipmentUuid	Uuid	1	RW	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Reference to the Equipment that is fitted with the Connector/Pin.			

Attribute Name	Type	Mult.	Access	Stereotypes
pinAndRole	PinAndRole	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:		If there is more than one pin used in a connector and/or there is a need to identify the role of one or more pins then this property can be used. For simple cases pinIdentification can be used instead.		

4.4.8 ExpectedEquipment

A definition of the restrictions on the equipment that is expected to be present in the physical network at a particular "place". The expected equipment will state the type and may constrain any other invariant properties. It may also provide desired ranges for dynamic properties.

Attribute Name	Type	Mult.	Access	Stereotypes
commonEquipmentProperties	CommonEquipmentProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
expectedNonFieldReplaceableModule	ExpectedNonFieldReplaceableModule	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
expectedHolder	ExpectedHolder	0..*	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				

4.4.9 ExpectedHolder

A definition of a holder expected in the ActualEquipment (i.e. an ActualHolder) as part of the constraints provided by the ExpectedEquipment.

Attribute Name	Type	Mult.	Access	Stereotypes
commonHolderProperties	CommonHolderProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

4.4.10 ExpectedNonFieldReplaceableModule

A structure that represents an expected equipment that cannot be replaced in the field. Is simply a subordinate part of an ExpectedEquipment (FRU). Does not have any exposed holders (any associated holders are assumed to belong to the containing FRU). Does not have any connectors (any associated connectors are assumed to belong to the containing FRU).

Attribute Name	Type	Mult.	Access	Stereotypes
commonEquipmentProperties	CommonEquipmentProperties	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				An identifier that is unique in the context of the GlobalClass from which it is inseparable.
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

4.4.11 PinAndRole

Provides an opportunity, for a pin, to give the location of the pin and the role of the pin.

Attribute Name	Type	Mult.	Access	Stereotypes
locationInConnector	String	1	R	Experimental OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				The named location of the pin in the context of the connector. This is likely to be the normal numbering/naming for the type of connector, e.g. "7", "6-GND", "Common" etc.

Attribute Name	Type	Mult.	Access	Stereotypes
pinRole	String	0..*	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: It is not always necessary to specify a role (or list of roles) as the connector locationInConnector may be sufficient (as these are sometimes clearly role based). Each entry represents a role in the context of the specific access port. Each entry ties the pin to a functional element in the associated NEP(s) etc. For example: - a pin might carry several distinct signals where each signal is identified in the list - a pin may carry a signal and power - a signal carried by a pin may be the receive flow (INPUT) to a bidirectional NEP or the transmit flow (OUTPUT) or indeed both (BIDIRECTIONAL).			
pinName	String	0..1	R	Experimental OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Where the pin has a distinct location identifier and a distinct name this field can be used for the name. For example: - locationInConnector = 6, pinName = GND			

4.5 Enumerations

4.5.1 ConnectorAndPinOrientation

Most connector schemes are asymmetric such that there are two orientations of the connector where a mating is only possible between two connectors of different orientations. A multi-pin connector may have a mix of pin orientations. In this case, it is expected that the dominant orientation of pin is chosen for the connector orientation.

Contains Enumeration Literals:

- MALE:
 - The connecting elements are dominantly protrusions.
- FEMALE:
 - The connecting elements are dominantly indentations.
- SYMMETRIC_NEUTRAL:
 - The pin (and housing) orientation combination is such that it is symmetric so a connector is compatible with itself. The connecting element may be a surface rather than protrusions or indentations.

4.5.2 EquipmentCategory

The form of equipment.

Contains Enumeration Literals:

- SUBRACK:
 - An assembly with holders designed to accommodate CIRCUIT_PACKs. The assembly is designed to be mounted in a RACK.
- CIRCUIT_PACK:
 - An assembly with connectors compatible with those in a holder. The assembly is designed to be mounted in a holder (SLOT) of a SUBRACK. May also support holders (SLOTS) for SMALL_FORMFACTOR_PLUGGABLEs.

- **SMALL_FORMFACTOR_PLUGGABLE:**
 - A small assembly (compared to a CIRCUIT_PACK) with connectors compatible with those in a holder. The assembly is designed to be mounted in a holder (SLOT) of a CIRCUIT_PACK or STAND_ALONE_UNIT.
- **STAND_ALONE_UNIT:**
 - An assembly with connectors for cabling and potentially with holders. The assembly is designed to be mounted in a freeform environment (on a table or simple mechanical cabinet). May support holders (SLOTS) for CIRCUIT_PACKs or for SMALL_FORMFACTOR_PLUGGABLEs.
- **RACK:**
 - A mechanical assembly with cabling and predefined mounting points for particular SUBRACK types. The assembly is designed to be mounted on the floor in a row with other RACKs.

4.5.3 EquipmentObjectType

The list of TAPI Equipment Object types/classes.

Contains Enumeration Literals:

- DEVICE:
- ACCESS_PORT:
- EQUIPMENT:
- HOLDER:
- PHYSICAL_SPAN:
- ABSTRACT_STRAND:

4.5.4 HolderCategory

The form of holder.

Contains Enumeration Literals:

- SLOT:
 - A guided holder with fixed connectors. The guided holder is designed to take a particular form of CIRCUIT_PACK or SMALL_FORMFACTOR_PLUGGABLE

4.6 Primitives

5 Ethernet Model

TapiEth: This module contains TAPI Ethernet Model definitions. Source: TapiEth.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

5.1 Diagrams

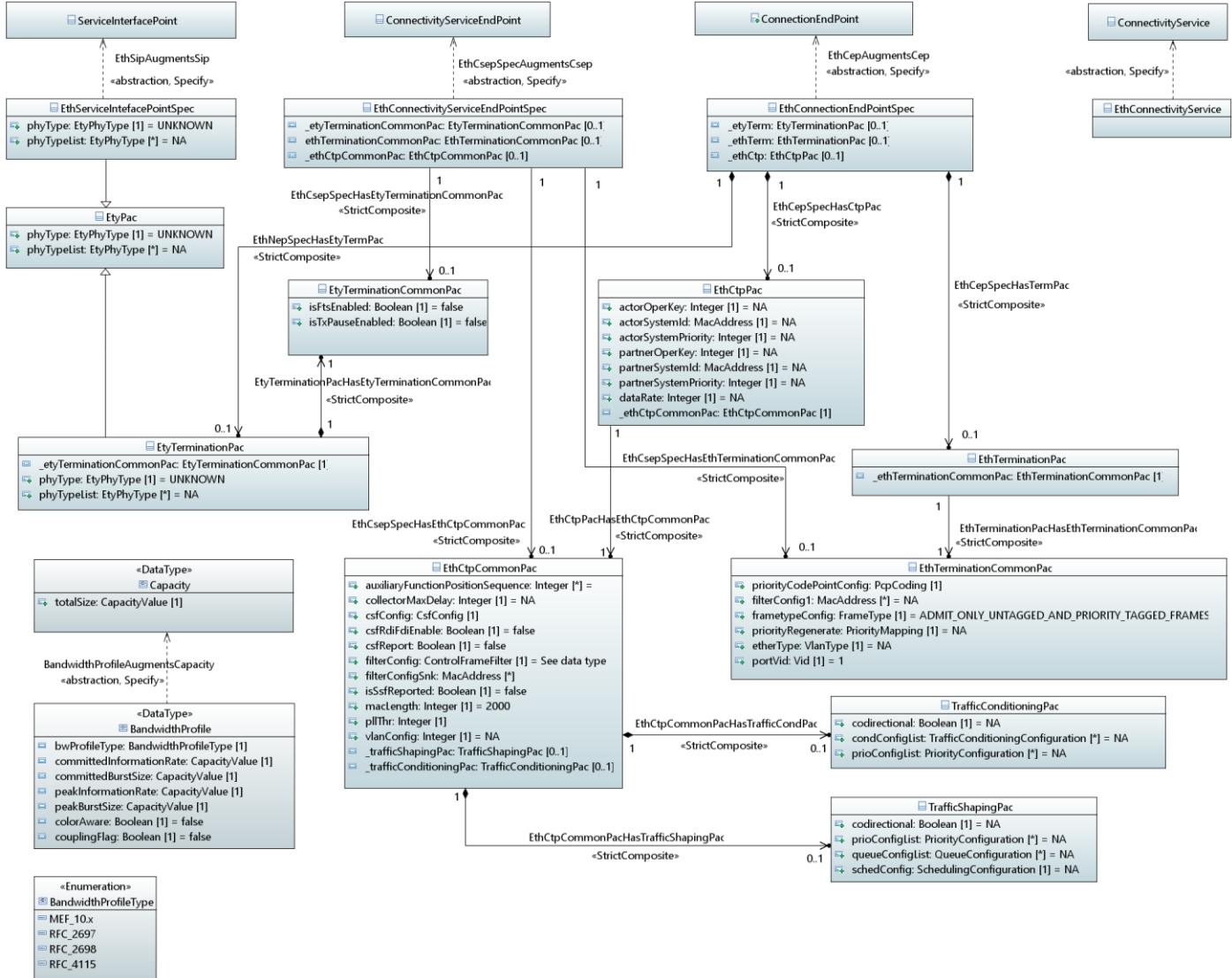
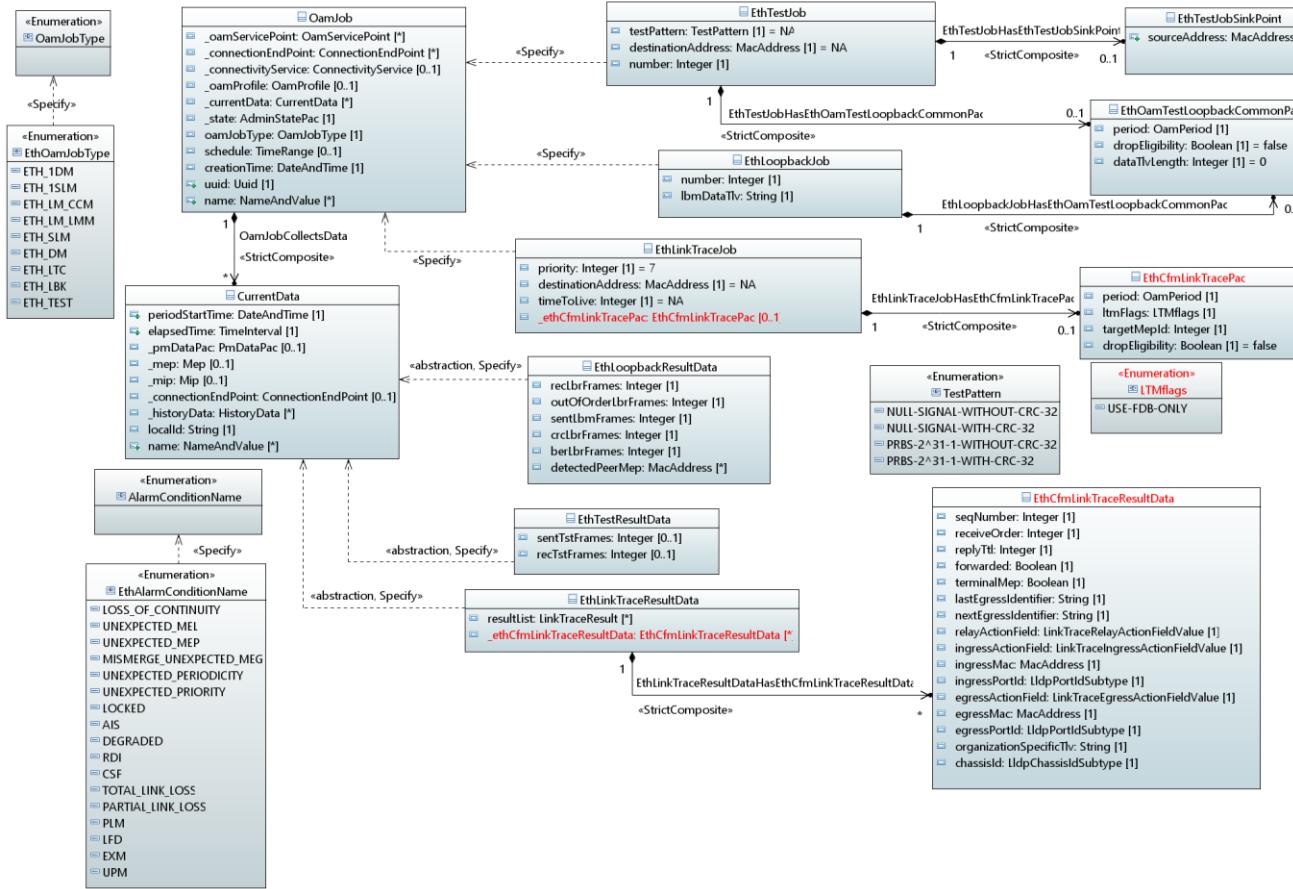
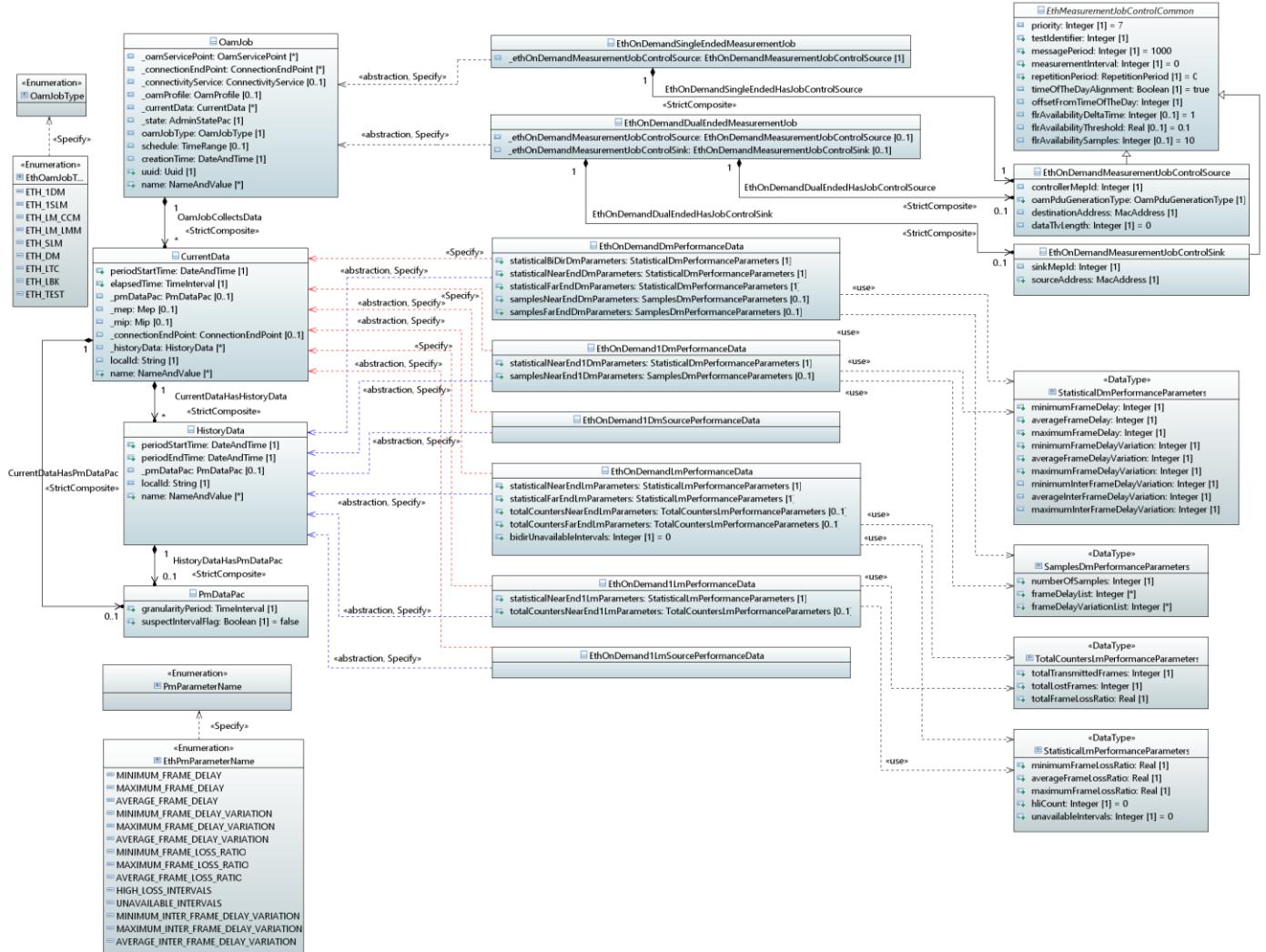
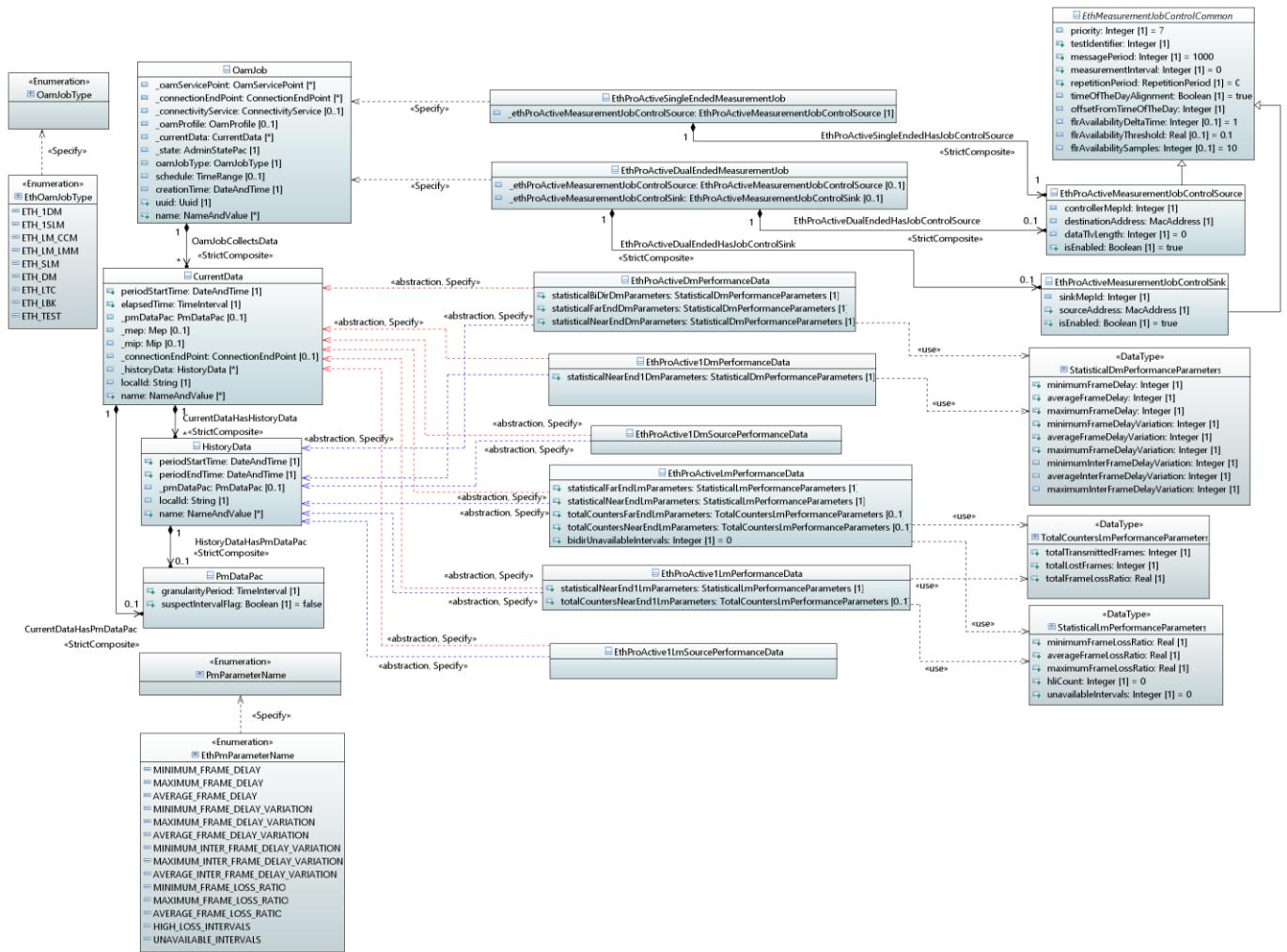
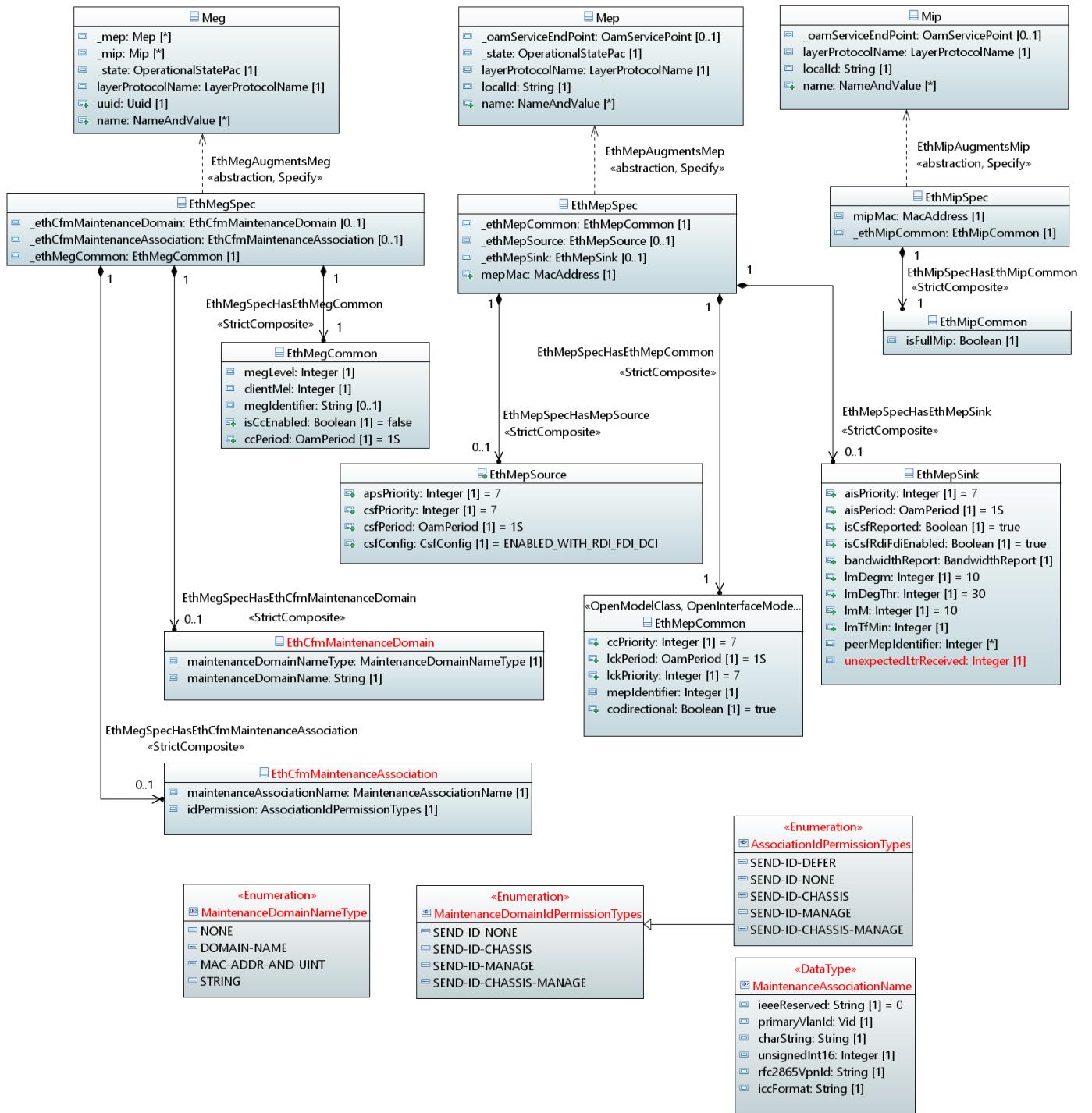


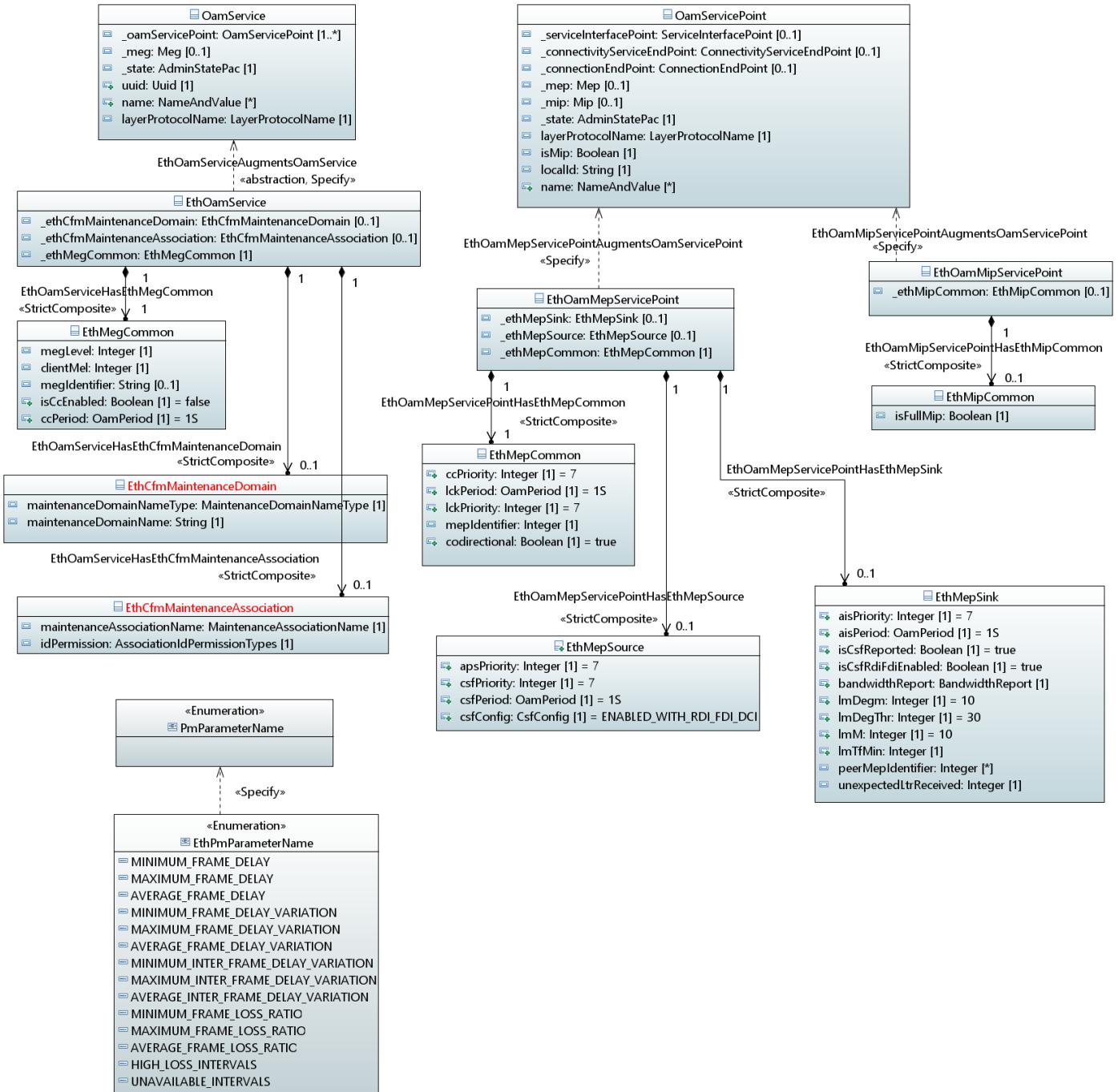
Figure 15 – *EthSpecConnectivity*

Figure 16 – *EthSpecJobsFm*

Figure 17 – *EthSpecJobsPmOnDemand*

Figure 18 – *EthSpecJobsPmProActive*

Figure 19 – *EthSpecOamResource*

Figure 20 – *EthSpecOamService*

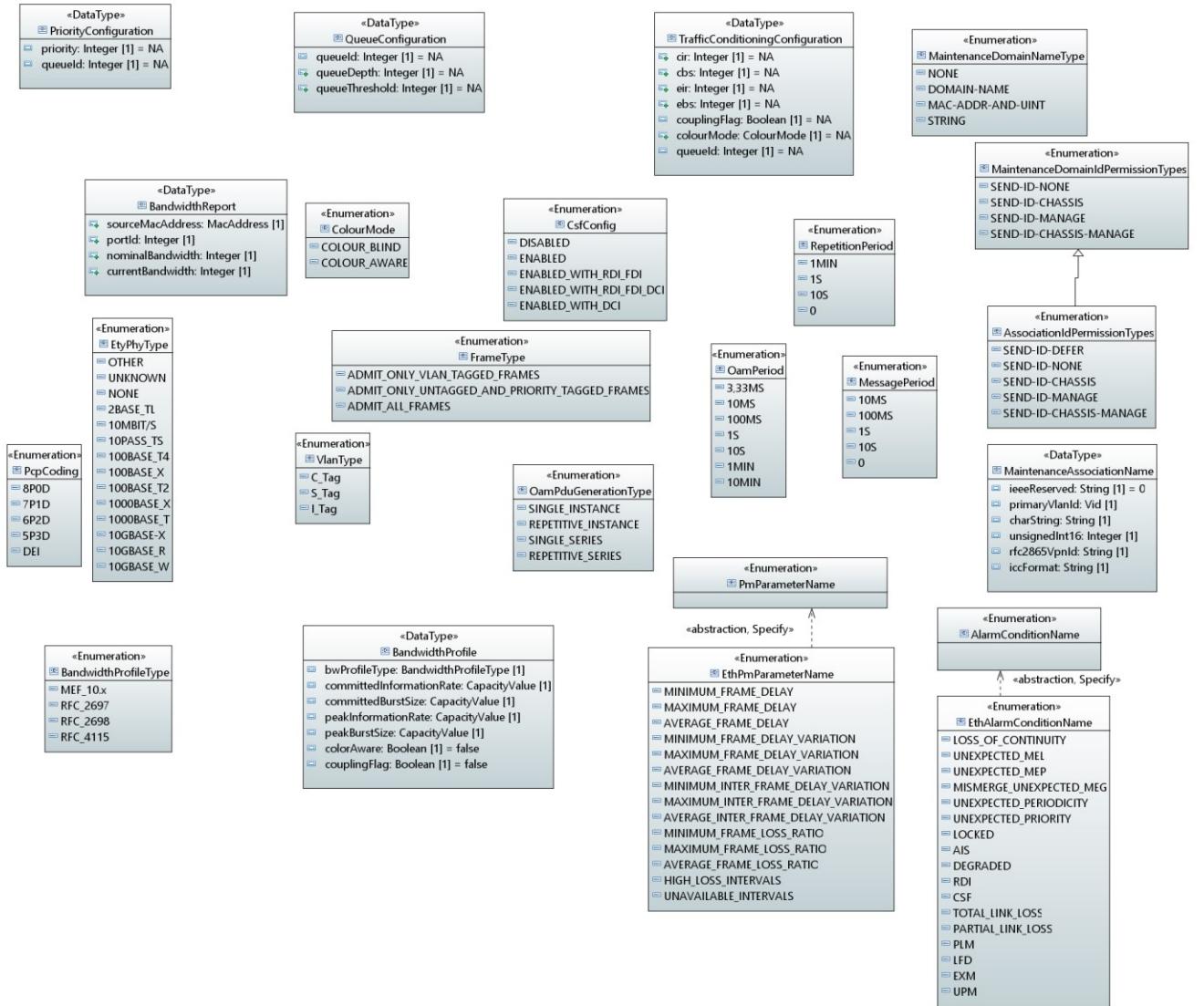


Figure 21 – EthernetTypes

5.2 Classes

5.2.1 EthCfmLinkTracePac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
period	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: IEEE P802.1Qcx/D0.3: The interval between LTM transmissions to be used by all MEPs in the Maintenance Association.			
ltmFlags	LTMflags	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: The flags field for the LTMs transmitted by the MEP.			
targetMepId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: An indication of a destination MEP, the MEPID of a MEP. Alternative to destination MAC address.			
dropEligibility	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: Drop eligible bit value to be used in the VLAN tag, if present in the transmitted frame.			

5.2.2 EthCfmLinkTraceResultData

IEEE P802.1Qcx/D0.3: MEF 38: An index to distinguish among multiple LTRs with the same LTR transaction-id field value. Assigned sequentially from 1, in the order that the Linktrace Initiator received the LTRs.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
seqNumber	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: type uint32 range "0..4294967295" Transaction identifier returned by a previous transmit linktrace message command, indicating which LTMs response is going to be returned. MEF 38: The LTM Transaction Identifier to which the LTR entries will be attached.			

Attribute Name	Type	Mult.	Access	Stereotypes
receiveOrder	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: type uint32 range "1..4294967295" An index to distinguish among multiple LTRs with the same LTR Transaction Identifier field value. Assigned sequentially from 1, in the order that the Linktrace Initiator received the LTRs.			
replyTtl	Integer	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: TTL field value for a returned LTR. Range "0..255"			
forwarded	Boolean	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: Indicates if a LTM was forwarded by the responding MP, as returned in the FwdYes flag of the flags field.			
terminalMep	Boolean	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: A Boolean value stating whether the forwarded LTM reached a MEP enclosing its MA, as returned in the Terminal MEP flag of the Flags field.			
lastEgressIdentifier	String	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: String length "8" An octet field holding the Last Egress Identifier returned in the LTR Egress Identifier TLV of the LTR. The Last Egress Identifier identifies the MEP Linktrace Initiator that originated, or the Linktrace Responder that forwarded, the LTM to which this LTR is the response. This is the same value as the Egress Identifier TLV of that LTM.			
nextEgressIdentifier	String	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: String length "8" An octet field holding the Next Egress Identifier returned in the LTR Egress Identifier TLV of the LTR. The Next Egress Identifier Identifies the Linktrace Responder that transmitted this LTR, and can forward the LTM to the next hop. This is the same value as the Egress Identifier TLV of the forwarded LTM, if any. If the FwdYes bit of the Flags field is false, the contents of this field are undefined, i.e., any value can be transmitted, and the field is ignored by the receiver.			

Attribute Name	Type	Mult.	Access	Stereotypes
relayActionField	LinkTraceRelayActionFieldValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: An enumerated value indicating the value returned in the Relay Action field.			
ingressActionField	LinkTraceIngressActionFieldValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: OPTIONAL • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: The value returned in the Ingress Action Field of the LTM. IEEE P802.1Qcx/D0.3: The value INGRESS-NO-TLV indicates that no Reply Ingress TLV was returned in the LTM.			
ingressMac	MacAddress	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: MAC address returned in the ingress MAC address field. IEEE P802.1Qcx/D0.3: If the ingressActionField attribute contains the value INGRESS-NO-TLV, then the contents of this attribute is meaningless.			
ingressPortId	LldpPortIdSubtype	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: Ingress Port ID. IEEE P802.1Qcx/D0.3: If the ingressActionField attribute contains the value INGRESS-NO-TLV, then the contents of this attribute are meaningless.			
egressActionField	LinkTraceEgressActionFieldValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: An enumerated value indicating the value returned in the Egress Action field. IEEE P802.1Qcx/D0.3: The value EGRESS-NO-TLV indicates that no Reply Egress TLV was returned in the LTM.			
egressMac	MacAddress	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	IEEE P802.1Qcx/D0.3: MEF 38: MAC address returned in the egress MAC address field. IEEE P802.1Qcx/D0.3: If the egressActionField contains the value EGRESS-NO-TLV, then the contents of this attribute are meaningless.			

Attribute Name	Type	Mult.	Access	Stereotypes
egressPortId	LldpPortIdSubtype	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			MEF 38: IEEE P802.1Qcx/D0.3: Egress Port ID. IEEE P802.1Qcx/D0.3: If the egressActionField attribute contains the value EGRESS-NO-TLV, then the contents of this attribute are meaningless.
organizationSpecificTlv	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			String length "0 4..1500"; All Organization specific TLVs returned in the LTR, if any. Includes all octets including and following the TLV Length field of each TLV, concatenated together.
chassisId	LldpChassisIdSubtype	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			MEF 38: The chassis-id-subtype contains the chassis ID entity that is listed in the chassis ID field. This is a combination of the 'Chassis ID Subtype' and 'chassis ID' fields. IEEE P802.1Qcx/D0.3: The Chassis ID returned in the Sender ID TLV of the LTR, if any. The format of a chassis identifier string. Objects of this type are always used with an associated lldp-chassis-is-subtype object, which identifies the format of the particular lldp-chassis-id object instance. If the associated lldp-chassis-id-subtype object has a value of chassis-component, then the octet string identifies a particular instance of the entPhysicalAlias object (defined in IETF RFC 2737) for a chassis component (i.e., an entPhysicalClass value of chassis(3)). If the associated lldp-chassis-id-subtype object has a value of interface-alias, then the octet string identifies a particular instance of the ifAlias object (defined in IETF RFC 2863) for an interface on the containing chassis. If the particular ifAlias object does not contain any values, another chassis identifier type should be used.

5.2.3 EthCfmMaintenanceAssociation

IEEE CFM parameters applicable to the composing class. IEEE P802.1Qcx/D0.3: Provides configuration and operational data for the Maintenance Associations. A Maintenance Association is a set of MEPs, each configured with the same MAID and MD level, established to verify the integrity of a single service instance. A Maintenance Association can be thought of as a full mesh of Maintenance Entities among a set of MEPs so configured.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
maintenanceAssociationName	MaintenanceAssociationName	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: IEEE P802.1Qcx/D0.3: MEF 38: The Maintenance Association name and name format choice.			
idPermission	AssociationIdPermissionTypes	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: This parameter indicates what, if anything, is to be included in the Sender ID TLV transmitted by Maintenance Points configured in this MA. A value of 'defer' means that the contents of the Sender ID TLV are determined by the enclosing Maintenance Domain instance.			

5.2.4 EthCfmMaintenanceDomain

IEEE CFM parameters applicable to the composing class. IEEE P802.1Qcx/D0.3: MEF 38: A Maintenance Domain is the network or the part of the network for which faults in connectivity can be managed. A Maintenance Domain object is required in order to create an MA with a Maintenance Association Identifier (MAID) that includes that Maintenance Domains Name. From this Maintenance Domain managed object, all Maintenance Association managed objects associated with that Maintenance Domain managed object can be accessed, and thus controlled.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: IEEE P802.1Qcx/D0.3: MEF 38: The Maintenance Domain name format choice.			
maintenanceDomainNameType	MaintenanceDomainNameType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: A reference to the maintenance domain that this maintenance group is associated with.			
maintenanceDomainName	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: A reference to the maintenance domain that this maintenance group is associated with.			

5.2.5 EthConnectionEndPointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA

- objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_etyTerm	EtyTerminationPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
_ethTerm	EthTerminationPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
_ethCtp	EthCtpPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				

5.2.6 EthConnectivityService

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

5.2.7 EthConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_etyTerminationCommonPac	EtyTerminationCommonPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
ethTerminationCommonPac	EthTerminationCommonPac	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
_ethCtpCommonPac	EthCtpCommonPac	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

5.2.8 EthCtpCommonPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelAttribute
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
auxiliaryFunctionPositionSequence	Description:			
	Integer	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
collectorMaxDelay	Description: This attribute indicates the positions (i.e., the relative order) of all the MEP, MIP, and TCS objects which are associated with the CTP.			
	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
csfConfig	Description:			
	CsfConfig	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute models the combination of all CSF related MI signals (MI_CSF_Enable, MI_CSFRdifdi_Enable, MI_CSFDci_Enable) as defined in G.8021.			
csfRdiFdiEnable	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute models the MI_CSFRdifdiEnable information defined in G.8021.			
csfReport	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute models the MI_CSF_Reported information defined in G.8021.			
filterConfig	ControlFrameFilter	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute models the FilterConfig MI defined in section 8.3/G.8021. It indicates the configured filter action for each of the 33 group MAC addresses for control frames. The 33 MAC addresses are: - All bridges address: 01-80-C2-00-00-10, - Reserved addresses: 01-80-C2-00-00-00 to 01-80-C2-00-00-0F, - GARP Application addresses: 01-80-C2-00-00-20 to 01-80-C2-00-00-2F. The filter action is Pass or Block. If the destination address of the incoming ETH_CI_D matches one of the above addresses, the filter process shall perform the corresponding configured filter action. If none of the above addresses match, the ETH_CI_D is passed.			
filterConfigSnk	MacAddress	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute models the FilteConfig MI defined in 8.3/G.8021. It indicates the configured filter action for each of the 33 group MAC addresses for control frames. The 33 MAC addresses are: 01-80-C2-00-00-10, 01-80-C2-00-00-00 to 01-80-C2-00-00-0F, and 01-80-C2-00-00-20 to 01-80-C2-00-00-2F. The filter action is Pass or Block. If the destination address of the incoming ETH_CI_D matches one of the above addresses, the filter process shall perform the corresponding configured filter action. If none of the above addresses match, the ETH_CI_D is passed.			
isSsfReported	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute provisions whether the SSF defect should be reported as fault cause or not. It models the ETH-LAG_FT_Sk_MI_SSF_Reported defined in G.8021.			
macLength	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute models the MAC_Lenght MI defined in 8.6/G.8021 for the MAC Length Check process. It indicates the allowed maximum frame length in bytes.			
pllThr	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute provisions the threshold for the number of active ports. If the number of active ports is more than zero but less than the provisioned threshold, a cPLL (Partial Link Loss) is raised. See section 9.7.1.2 of G.8021.			
vlanConfig	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute models the ETHx/ETH-m_A_So_MI_Vlan_Config information defined in G.8021.			
_trafficShapingPac	TrafficShapingPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_trafficConditioningPac	TrafficConditioningPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

5.2.9 EthCtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
actorOperKey	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: See 802.1AX: The current operational value of the Key for the Aggregator. The administrative Key value may differ from the operational Key value for the reasons discussed in 5.6.2. The meaning of particular Key values is of local significance.			
actorSystemId	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: A MAC address used as a unique identifier for the System that contains this Aggregator.			
actorSystemPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: Indicating the priority associated with the Actors System ID.			
dataRate	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: The current data rate, in bits per second, of the aggregate link. The value is calculated as N times the data rate of a single link in the aggregation, where N is the number of active links.			
partnerOperKey	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: The current operational value of the Key for the Aggregators current protocol Partner. If the aggregation is manually configured, this Key value will be a value assigned by the local System.			
partnerSystemId	MacAddress	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: A MAC address consisting of the unique identifier for the current protocol Partner of this Aggregator. A value of zero indicates that there is no known Partner. If the aggregation is manually configured, this System ID value will be a value assigned by the local System.			
partnerSystemPriority	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: See 802.1AX: Indicates the priority associated with the Partners System ID. If the aggregation is manually configured, this System Priority value will be a value assigned by the local System.			

Attribute Name	Type	Mult.	Access	Stereotypes
_ethCtpCommonPac	EthCtpCommonPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

5.2.10 EthLinkTraceJob

This class represents the Link Trace (LT) process for fault localization or for discovering the intermediate MIPs along the link from the MEP Source to a target MEP or MIP. An LTM frame will be sent from the MEP source to the target MEP/MIP. The termination occurs at specified stop time (schedule attribute of OamJob).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	G.8052: This parameter provides the priority to be used in the LBM frame. G.8052: This parameter provides the priority to be used in the TST frame.			
destinationAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	G.8052: This parameter provides the destination address, i.e., the MAC Address of the target MEP or MIP.			
timeToLive	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	G.8052: This parameter provides the Time To Live (TTL) parameter of the Link Track protocol. The TTL parameter allows the receiver (MIP or MEP) of the LTM frame to determine if the frame can be terminated. TTL is decremented every time the LTM frame is relayed. LTM frame with TTL<=1 is terminated and not relayed. IEEE P802.1Qcx/D0.3: MEF 38: An initial value for the LTM TTL field.			
_ethCfmLinkTracePac	EthCfmLinkTracePac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

5.2.11 EthLinkTraceResultData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
resultList	LinkTraceResult	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
	G.8052: This parameter returns the results of the LT process. It contains a list of the result received from the individual LTR frames. The result from the individual LTR frame include the Source Mac Address, the TTL, and TLV.			
_ethCfmLinkTraceResultData	EthCfmLinkTraceResultData	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				

5.2.12 EthLoopbackJob

This class represents the Loopback (LB) process (send a series of LB messages carrying a test pattern to a particular MEP). The termination occurs at specified stop time (schedule attribute of OamJob). This class models also the "loopback discover" process, when destinationAddress is multicast. When number is greater than 1, then the process is to perform a Loopback (LB) Series process (send a series of N LB messages to a particular MEP/MIP).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethOamTestLoopbackCommonPac	EthOamTestLoopbackCommonPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
number	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This parameter specifies how many LB messages to be sent for the LB_Series process.				
lbmDataTlv	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
IEEE P802.1Qcx/D0.3: String length "1..1480" The loopback message Data TLV type. MEF 38: An arbitrary amount of data to be included in a Data TLV.				

5.2.13 EthLoopbackResultData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
recLbrFrames	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This parameter returns the total number of received LBR messages, including the out of order LBR frames.				
outOfOrderLbrFrames	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This parameter returns the number of LBR traffic unites (messages) that were received out of order (OO).				

Attribute Name	Type	Mult.	Access	Stereotypes
sentLbmFrames	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This parameter returns the total number of sent LBM frames.				
crcLbrFrames	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
G.8052: This parameter returns the number of LBR frames where the CRC in the pattern failed.				
berLbrFrames	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
G.8052: This parameter returns the number of LBR frames where there was a bit error in the pattern.				
detectedPeerMep	MacAddress	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
G.8052: This parameter returns the MAC addresses of the discovered peer MEPs of the subject MEP.				

5.2.14 EthMeasurementJobControlCommon

Time length over which each Availability Frame Loss Ratio value is calculated. This parameter allows to generalize SES and UAS. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				<p>This attribute contains the priority value on which the MEP performs the measurement. When the measurement is enabled, the MEP should use this value to encode the priority of generated measurement frames (OAM PDU frames.). The EMF uses this value to assign the P parameter of the measurement operation.</p>
Description:				
testIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				<p>This attribute is used to distinguish each measurement session if multiple measurement sessions are simultaneously activated towards a peer MEP including concurrent on-demand and proactive tests. It must be unique at least within the context of any measurement type for the MEG and initiating MEP. Note: The attribute is not used in case of 2-way loss measurement.</p>
messagePeriod	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				<p>This attribute indicates the period (frequency) of the measurement frame transmission. Note that the value 0 means that only one OAM message per measurement interval is generated. Unit is milliseconds.</p>
measurementInterval	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				<p>This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed (i.e., OAM messages are generated) and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.</p>
repetitionPeriod	RepetitionPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				<p>This attribute contains the time between the start of two measurement intervals. This IS applicable for the repetitive instance type and MAY be applicable for the repetitive series type. Note that a value of 0 means not applicable (NA), which is for the cases of single instance, single series, or repetitive series without extra gap in between the measurement intervals (i.e., also known as continuous series).</p>
timeOfDayAlignment	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				<p>MEF 35.1: [D7] A SOAM PM Implementation SHOULD allow for no alignment to the time-of-day clock.</p>

Attribute Name	Type	Mult.	Access	Stereotypes
offsetFromTimeOfTheDay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				MEF 35.1: [D8] A SOAM PM Implementation SHOULD support a configurable (in minutes) offset from ToD time for alignment of the start of Measurement Intervals other than the first Measurement Interval.
flrAvailabilityDeltaTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				Time length over which each Availability Frame Loss Ratio value is calculated. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.
flrAvailabilityThreshold	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				Frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each time interval (as specified by Availability Delta Time). MEF 35.1: [R81]/[CR61] A SOAM PM Implementation MUST support a configurable Availability frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each delta-t interval per MEF 10.3 [R82]/[CR62] The Availability frame loss ratio threshold range of 0.00 through 1.00 MUST be supported in increments of 0.01. [D33]/[CD18] [O8] The default Availability frame loss ratio threshold SHOULD be 0.1.
flrAvailabilitySamples	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				Number of consecutive Availability Frame Loss Ratio measurements to be used to determine Available/Unavailable state transitions. MEF 35.1: [R80]/[CR60] [O8] The number range of 1 through 10 MUST be supported for the configurable number of consecutive Availability flr measurements to be used to determine Available/Unavailable state transitions. This parameter is equivalent to the Availability parameter of n as specified by MEF 10.3. [D32]/[CD17] [O8] The default number of n for Availability SHOULD be 10.

5.2.15 EthMegCommon

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelAttribute
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
megLevel	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
clientMeli	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
megIdentifier	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	Optional in case 802.1Q maintenanceAssociationName is used.			
isCcEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_CC_Enable signal defined in G.8021 and configured as specified in G8051. ITU-T G.8013/Y.1731 (2015)/Amd.1 (11/2018): When ETH-CC transmission is enabled in a MEG, all MEPs are enabled to periodically transmit frames with ETH-CC information to their peer MEPs in the MEG.			
ccPeriod	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_CC_Period signal defined in G.8021 and configured as specified in G8051. It is the period at which the CCM message should be sent. Default values are: 3.33 ms for PS, 100 ms for PM, 1 s for FM. ITU-T G.8013/Y.1731 (2015)/Amd.1 (11/2018): The ETH-CC transmission period is the same for all MEPs in the MEG.			

5.2.16 EthMegSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethCfmMaintenanceDomain	EthCfmMaintenanceDomain	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_ethCfmMaintenanceAssociation	EthCfmMaintenanceAssociation	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_ethMegCommon	EthMegCommon	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

5.2.17 EthMepCommon

Continuity Check Process related attributes: ccPeriod, ccPriority, isCcEnabled

Basic attributes: adminState, clientMeli, megIdentifier, mepMac

Lock Process related attributes: lckPeriod, lckPriority

This object class models the MEP functions that are common to MEP Sink and MEP Source.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
ccPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the MI_CC_Pri signal defined in G.8021 and configured as specified in G8051. It is the priority at which the CCM message should be sent.				

Attribute Name	Type	Mult.	Access	Stereotypes
lckPeriod	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute models the MI_LCK_Period signal defined in G.8021 and configured as specified in G8051. It is the frequency at which the LCK messages should be sent.
lckPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute models the MI_LCK_Pri signal defined in G.8021 and configured as specified in G8051. It is the priority at which the LCK messages should be sent.
mepIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				IEEE P802.1Qcx/D0.3: MEF 38: Integer that is unique among all the MEPs in the same Maintenance Association (MEG). G.8052: This attribute contains the identifier of the MEP.
codirectional	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute specifies the directionality of the Ethernet MEP with respect to the associated CEP. The value of TRUE means that the sink part of the MEP terminates the same signal direction as the sink part of the CEP. The Source part behaves similarly. This attribute is meaningful only when CEP is bidirectional.

5.2.18 EthMepSink

Basic attribute: peerMepRefList

AIS Process related attributes: aisPeriod, aisPriority

Bandwidth notification Process related attribute: bandwidthReport

1DM related attribute: 1DmPriority

CSF Process related attributes: isCsfRdiFdiEnabled, isCsfReported

Defect correlation Process related attribute: currentProblemList

This object class models the MEP sink function. Instance of this object class can be created and contained by ETH CTP or TTP objects. It also provides the management of the dual-ended maintenance job, such as test.

This object contains the configuration parameters for detecting "degraded signal" (DEG).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
aisPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_AIS_Pri signal defined in G.8021 and configured as specified in G8051. It is the priority at which the AIS messages should be sent.			
aisPeriod	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_AIS_Period signal defined in G.8021 and configured as specified in G8051. It is the frequency at which the AIS messages should be sent.			
isCsfReported	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_CSF_Reported signal defined in G.8021 and configured as specified in G8051. It configures whether the secondary failure CSF should be reported or not.			
isCsfRdiFdiEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the MI_CSFrdifdiEnable signal defined in G.8021 and configured as specified in G8051. aSSFrdi ? dCSF-RDI and MI_CSFrdifdiEnable aSSFfdi ? dCSF-FDI and MI_CSFrdifdiEnable			
bandwidthReport	BandwidthReport	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute models the content of the bandwidth report received by the MEP Sink from the peer MEP Source.			
lmDegm	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute defines the number of consecutive bad seconds necessary for the "degraded" detection. See also section "Degraded signal defect (dDEG)" in G.8021.			
lmDegThr	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute defines the threshold for declaring a "bad second". See also section "Degraded signal defect (dDEG)" in G.8021.			
lmM	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute defines the number of consecutive good seconds necessary for the clearing of "degraded". See also section "Degraded signal defect (dDEG)" in G.8021.			
lmTfMin	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute defines the necessary number of transmitted frames to enable the detection of "bad seconds". See also section "Degraded signal defect (dDEG)" in G.8021.			
peerMepIdentifier	Integer	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: G.8052: This attribute models the MI_PeerMEP_ID[i] signal defined in G.8021 and configured as specified in G.8051. It provides the identifiers of the MEPs which are peer to the subject MEP.			
unexpectedLtrReceived	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: IEEE P802.1Qcx/D0.3: MEF 38: The total number of unexpected LTRs received.			

5.2.19 EthMepSource

On demand measurement job control related operation:
 establishOnDemandDualEndedMeasurementJobSource

Loopback related operations: loopbackDiscover, loopbackSeries, loopbackTest, loopbackTestTerminate

APS Process related attribute: apsPriority

Basic attribute: mepIdentifier

Proactive measurement job control related operation: establishProActiveDualEndedMeasurementJobSource

This object class models the MEP source function. Instance of this object class can be created and contained by ETH CTP or TTP objects. It also provides the management of single-ended maintenance jobs, such as loopback test, loopback discover, loopback series, link trace, and dual-ended maintenance job, such as test.

Link trace related operation: linkTrace

CSF Process related attributes: csfConfig, csfPeriod, csfPriority

Test related operations: testInitiatorStart, testInitiatorTerminate

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
apsPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute specifies the priority of the APS messages. See section 8.1.5 APS insert process in G.8021.				
csfPriority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the MI_CSF_Pri signal defined in G.8021 and configured as specified in G8051. It is the priority at which the CSF messages should be sent				
csfPeriod	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the MI_CSF_Period signal defined in G.8021 and configured as specified in G8051. It is the period at which the CSF messages should be sent.				
csfConfig	CsfConfig	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the combination of all CSF related MI signals (MI_CSF_Enable, MI_CSFrdfdi_Enable, MI_CSFdci_Enable) as defined in G.8021.				

5.2.20 EthMepSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethMepCommon	EthMepCommon	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
_ethMepSource	EthMepSource	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
_ethMepSink	EthMepSink	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
mepMac	MacAddress	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
This attribute contains the MAC Address of the MEP.				

5.2.21 EthMipCommon

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
isFullMip	Boolean	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute indicates whether the MIP is a full MIP (true) or a down-half MIP (false). Up-half MIP is not foreseen by G.8052

5.2.22 EthMipSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
mipMac	MacAddress	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute contains the MAC address of the MIP instance.

_ethMipCommon	EthMipCommon	1	RW	OpenModelAttribute
				<ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:

5.2.23 EthOamMepServicePoint

This class defines the common parameters for configuration of Sink and/or Source MEP.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethMepSink	EthMepSink	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_ethMepSource	EthMepSource	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_ethMepCommon	EthMepCommon	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

5.2.24 EthOamMipServicePoint

This class defines the common parameters for configuration of MIP.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethMipCommon	EthMipCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

5.2.25 EthOamService

This class defines the parameters for configuration of MEG.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethCfmMaintenanceDomain	EthCfmMaintenanceDomain	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_ethCfmMaintenanceAssociation	EthCfmMaintenanceAssociation	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_ethMegCommon	EthMegCommon	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

5.2.26 EthOamTestLoopbackCommonPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
period	OamPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
G.8052: This parameter provides the periodicity of the TST OAM messages. G.8052: This parameter provides the periodicity of the LBM OAM messages used in the LB Series process.				
dropEligibility	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: G.8052: This parameter provides the eligibility of frames with unicast ETH-TST information to be discarded when congestion conditions are encountered. G.8052: This parameter provides the eligibility of frames with unicast ETH-LB information to be discarded when congestion conditions are encountered.			
dataTlvLength	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: G.8052: This parameter provides the length (in number of octet) of the optional Data TLV to be included in the TST frame.			

5.2.27 EthOnDemand1DmPerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEnd1DmParameters	Description: This attribute contains the statistical near end performance parameters.			
	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
samplesNearEnd1DmParameters	Description: This attribute contains the results of an on-demand frame delay measurement job in the ingress direction.			
	SamplesDmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

5.2.28 EthOnDemand1DmSourcePerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

5.2.29 EthOnDemand1LmPerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEnd1LmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	This attribute contains the statistical near end performance parameters.			
totalCountersNearEnd1LmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	This attribute contains the results of an on-demand synthetic loss measurement job in the ingress direction.			

5.2.30 EthOnDemand1LmSourcePerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

5.2.31 EthOnDemandDmPerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalBiDirDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
	This attribute contains the statistical bidirectional performance parameters.			

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEndDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the statistical near end performance parameters.				
statisticalFarEndDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical far end performance parameters.				
samplesNearEndDmParameters	SamplesDmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the results of an on-demand frame delay measurement job in the ingress direction.				
samplesFarEndDmParameters	SamplesDmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the results of an on-demand frame delay measurement job in the ingress direction.				

5.2.32 EthOnDemandDualEndedMeasurementJob

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethOnDemandMeasurementJobControlSource	EthOnDemandMeasurementJobControlSource	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
_ethOnDemandMeasurementJobControlSink	EthOnDemandMeasurementJobControlSink	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

5.2.33 EthOnDemandLmPerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEndLmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical near end performance parameters.				
statisticalFarEndLmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical far end performance parameters.				
totalCountersNearEndLmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the results of an on-demand synthetic loss measurement job in the ingress direction.				
totalCountersFarEndLmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the results of an on-demand synthetic loss measurement job in the egress direction.				

Attribute Name	Type	Mult.	Access	Stereotypes
bidirUnavailableIntervals	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

5.2.34 EthOnDemandMeasurementJobControlSink

This object class represents an on-demand measurement job controller sink for 1-way measurements. It is created as a result of an establishOnDemandDualEndedMeasurementJobSink() operation. It is deleted either automatically after the measurement job has completed (stop time reached) and the performance data AVC notification has been sent, or by an explicit abortOnDemandMeasurementJob() operation when the measurement job is running.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
sinkMepId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
sourceAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
testIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>This attribute is used to distinguish each measurement session if multiple measurement sessions are simultaneously activated towards a peer MEP including concurrent on-demand and proactive tests. It must be unique at least within the context of any measurement type for the MEG and initiating MEP. Note: The attribute is not used in case of 2-way loss measurement.</p>			
messagePeriod	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute indicates the period (frequency) of the measurement frame transmission. Note that the value 0 means that only one OAM message per measurement interval is generated. Unit is milliseconds.</p>			
measurementInterval	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed (i.e., OAM messages are generated) and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.</p>			
repetitionPeriod	RepetitionPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the time between the start of two measurement intervals. This IS applicable for the repetitive instance type and MAY be applicable for the repetitive series type. Note that a value of 0 means not applicable (NA), which is for the cases of single instance, single series, or repetitive series without extra gap in between the measurement intervals (i.e., also as known as continuous series).</p>			
timeOfDayAlignment	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>MEF 35.1: [D7] A SOAM PM Implementation SHOULD allow for no alignment to the time-of-day clock.</p>			
offsetFromTimeOfDay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>MEF 35.1: [D8] A SOAM PM Implementation SHOULD support a configurable (in minutes) offset from ToD time for alignment of the start of Measurement Intervals other than the first Measurement Interval.</p>			

Attribute Name	Type	Mult.	Access	Stereotypes
flrAvailabilityDeltaTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Time length over which each Availability Frame Loss Ratio value is calculated. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/ISL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.			
flrAvailabilityThreshold	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each time interval (as specified by Availability Delta Time). MEF 35.1: [R81]/[CR61] A SOAM PM Implementation MUST support a configurable Availability frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each delta-t interval per MEF 10.3 [R82]/[CR62] The Availability frame loss ratio threshold range of 0.00 through 1.00 MUST be supported in increments of 0.01. [D33]/[CD18] [O8] The default Availability frame loss ratio threshold SHOULD be 0.1.			
flrAvailabilitySamples	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Number of consecutive Availability Frame Loss Ratio measurements to be used to determine Available/Unavailable state transitions. MEF 35.1: [R80]/[CR60] [O8] The number range of 1 through 10 MUST be supported for the configurable number of consecutive Availability flr measurements to be used to determine Available/Unavailable state transitions. This parameter is equivalent to the Availability parameter of n as specified by MEF 10.3. [D32]/[CD17] [O8] The default number of n for Availability SHOULD be 10.			

5.2.35 EthOnDemandMeasurementJobControlSource

Optional attributes: dataTlvLength, testIdentifier

Basic attributes: destinationAddress, priority

This object class represents an on-demand measurement job controller source for 1-way measurements. It is created as a result of an establishOnDemandDualEndedMeasurementJobSource() operation. It is deleted either automatically after the measurement job has completed (stop time reached), or by an explicit abortOnDemandMeasurementJob() operation while the measurement job is running.

Measurement configuration related attributes: oamPduGenerationType, startTime, stopTime, messagePeriod, repetitionPeriod, measurementInterval

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
controllerMepId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
oamPduGenerationType	OamPduGenerationType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute contains the pattern that is used for the generation of OAM PDUs.			
destinationAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute contains the MAC address of the peer MEP. See G.8013 for details.			
dataTlvLength	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This parameter provides the size of the optional data TLV. Non-negative integer represents the number of bytes for the length of the padding TLV. Notes: When configuring this parameter one should be aware of the maximum allowed total frame size limitation. The attribute is not used in case of 2-way loss measurement.			
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute contains the priority value on which the MEP performs the measurement. When the measurement is enabled, the MEP should use this value to encode the priority of generated measurement frames (OAM PDU frames.). The EMF uses this value to assign the P parameter of the measurement operation.			
testIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute is used to distinguish each measurement session if multiple measurement sessions are simultaneously activated towards a peer MEP including concurrent on-demand and proactive tests. It must be unique at least within the context of any measurement type for the MEG and initiating MEP. Note: The attribute is not used in case of 2-way loss measurement.			

Attribute Name	Type	Mult.	Access	Stereotypes
messagePeriod	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>This attribute indicates the period (frequency) of the measurement frame transmission. Note that the value 0 means that only one OAM message per measurement interval is generated. Unit is milliseconds.</p>			
measurementInterval	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed (i.e., OAM messages are generated) and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.</p>			
repetitionPeriod	RepetitionPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>This attribute contains the time between the start of two measurement intervals. This IS applicable for the repetitive instance type and MAY be applicable for the repetitive series type. Note that a value of 0 means not applicable (NA), which is for the cases of single instance, single series, or repetitive series without extra gap in between the measurement intervals (i.e., also as known as continuous series).</p>			
timeOfTheDayAlignment	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>MEF 35.1: [D7] A SOAM PM Implementation SHOULD allow for no alignment to the time-of-day clock.</p>			
offsetFromTimeOfTheDay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>MEF 35.1: [D8] A SOAM PM Implementation SHOULD support a configurable (in minutes) offset from ToD time for alignment of the start of Measurement Intervals other than the first Measurement Interval.</p>			
flrAvailabilityDeltaTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>Time length over which each Availability Frame Loss Ratio value is calculated. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/ISL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.</p>			

Attribute Name	Type	Mult.	Access	Stereotypes
flrAvailabilityThreshold	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each time interval (as specified by Availability Delta Time). MEF 35.1: [R81]/[CR61] A SOAM PM Implementation MUST support a configurable Availability frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each delta-t interval per MEF 10.3 [R82]/[CR62] The Availability frame loss ratio threshold range of 0.00 through 1.00 MUST be supported in increments of 0.01. [D33]/[CD18] [O8] The default Availability frame loss ratio threshold SHOULD be 0.1.			
flrAvailabilitySamples	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Number of consecutive Availability Frame Loss Ratio measurements to be used to determine Available/Unavailable state transitions. MEF 35.1: [R80]/[CR60] [O8] The number range of 1 through 10 MUST be supported for the configurable number of consecutive Availability flr measurements to be used to determine Available/Unavailable state transitions. This parameter is equivalent to the Availability parameter of n as specified by MEF 10.3. [D32]/[CD17] [O8] The default number of n for Availability SHOULD be 10.			

5.2.36 EthOnDemandSingleEndedMeasurementJob

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethOnDemandMeasurementJobControlSource	EthOnDemandMeasurementJobControlSource	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

5.2.37 EthProActive1DmPerformanceData

This object class represents the PM current data collected in a pro-active delay measurement job (using 1DM).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEnd1DmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute contains the statistical near end performance parameters.

5.2.38 EthProActive1DmSourcePerformanceData

This object class represents the PM current data collected in a pro-active delay measurement job (using 1DM), on the source or controller MEP.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

5.2.39 EthProActive1LmPerformanceData

This object class represents the PM current data collected in a pro-active loss measurement job (using 1SL).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalNearEnd1LmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute contains the statistical near end performance parameters.
totalCountersNearEnd1LmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute contains the results of an on-demand synthetic loss measurement job in the ingress direction.

5.2.40 EthProActive1LmSourcePerformanceData

This object class represents the PM current data collected in a pro-active loss measurement job (using 1SL), on the source or controller MEP.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

5.2.41 EthProActiveDmPerformanceData

This object class represents the PM current data collected in a pro-active delay measurement job (using DMM/DMR).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalBiDirDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical bidirectional performance parameters.				
statisticalFarEndDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical far end performance parameters.				
statisticalNearEndDmParameters	StatisticalDmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the statistical near end performance parameters.				

5.2.42 EthProActiveDualEndedMeasurementJob

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethProActiveMeasurementJobControlSource	EthProActiveMeasurementJobControlSource	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_ethProActiveMeasurementJobControlSink	EthProActiveMeasurementJobControlSink	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

5.2.43 EthProActiveLmPerformanceData

This object class represents the PM current data collected in a pro-active loss measurement job (using LMM/LMR or SLM/SLR).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
statisticalFarEndLmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the statistical far end performance parameters.				
statisticalNearEndLmParameters	StatisticalLmPerformanceParameters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the statistical near end performance parameters.				
totalCountersFarEndLmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the results of an on-demand synthetic loss measurement job in the egress direction.				

Attribute Name	Type	Mult.	Access	Stereotypes
totalCountersNearEndLmParameters	TotalCountersLmPerformanceParameters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the results of an on-demand synthetic loss measurement job in the ingress direction.				
bidirUnavailableIntervals	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
A generalized (bidirectional) UAS. MEF 35.1: A 32-bit counter reflecting the number of delta-t intervals evaluated as Unavailable (i.e., for which A<Controller, Responder>(delta-t) = 0).				

5.2.44 EthProActiveMeasurementJobControlSink

This object class allows the control of the proactive 1-way measurement. It is created as a part of an establishProActiveDualEndedMeasurementJobSink() operation. Lifecycle: A pre-condition of deleting the object is that the Enable attribute should have the value FALSE.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
sinkMepId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
sourceAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the MAC address of the peer MEP. See G.8013 for details.				
isEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute identifies the state of the measurement job. If set to TRUE, the MEP performs proactive Performance Measurement.			
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA
	Description: This attribute contains the priority value on which the MEP performs the measurement. When the measurement is enabled, the MEP should use this value to encode the priority of generated measurement frames (OAM PDU frames.). The EMF uses this value to assign the P parameter of the measurement operation.			
testIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA
	Description: This attribute is used to distinguish each measurement session if multiple measurement sessions are simultaneously activated towards a peer MEP including concurrent on-demand and proactive tests. It must be unique at least within the context of any measurement type for the MEG and initiating MEP. Note: The attribute is not used in case of 2-way loss measurement.			
messagePeriod	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA
	Description: This attribute indicates the period (frequency) of the measurement frame transmission. Note that the value 0 means that only one OAM message per measurement interval is generated. Unit is milliseconds.			
measurementInterval	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA
	Description: This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed (i.e., OAM messages are generated) and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.			
repetitionPeriod	RepetitionPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA
	Description: This attribute contains the time between the start of two measurement intervals. This IS applicable for the repetitive instance type and MAY be applicable for the repetitive series type. Note that a value of 0 means not applicable (NA), which is for the cases of single instance, single series, or repetitive series without extra gap in between the measurement intervals (i.e., also as known as continuous series).			
timeOfDayAlignment	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none">• AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: MEF 35.1: [D7] A SOAM PM Implementation SHOULD allow for no alignment to the time-of-day clock.			
offsetFromTimeOfDay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: MEF 35.1: [D8] A SOAM PM Implementation SHOULD support a configurable (in minutes) offset from ToD time for alignment of the start of Measurement Intervals other than the first Measurement Interval.			
flrAvailabilityDeltaTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Time length over which each Availability Frame Loss Ratio value is calculated. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/ISL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.			
flrAvailabilityThreshold	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each time interval (as specified by Availability Delta Time). MEF 35.1: [R81]/[CR61] A SOAM PM Implementation MUST support a configurable Availability frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each delta-t interval per MEF 10.3 [R82]/[CR62] The Availability frame loss ratio threshold range of 0.00 through 1.00 MUST be supported in increments of 0.01. [D33]/[CD18] [O8] The default Availability frame loss ratio threshold SHOULD be 0.1.			
flrAvailabilitySamples	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Number of consecutive Availability Frame Loss Ratio measurements to be used to determine Available/Unavailable state transitions. MEF 35.1: [R80]/[CR60] [O8] The number range of 1 through 10 MUST be supported for the configurable number of consecutive Availability flr measurements to be used to determine Available/Unavailable state transitions. This parameter is equivalent to the Availability parameter of n as specified by MEF 10.3. [D32]/[CD17] [O8] The default number of n for Availability SHOULD be 10.			

5.2.45 EthProActiveMeasurementJobControlSource

This object class represents a proactive measurement job controller source for 1way measurements. It is created as a part of an establishProactiveDualEndedMeasurementJobSource() operation.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA

- objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
controllerMepId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
destinationAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
This attribute provides the Unicast MAC address of the intened destination.				
dataTlvLength	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
This parameter provides the size of the optional data TLV. Non-negative integer represents the number of bytes for the length of the padding TLV. Notes: When configuring this parameter one should be aware of the maximum allowed total frame size limitation. The attribute is not used in case of 2-way loss measurement.				
isEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
This attribute identifies the state of the measurement job. If set to TRUE, the MEP performs proactive Performance Measurement.				
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA
Description:				
This attribute contains the priority value on which the MEP performs the measurement. When the measurement is enabled, the MEP should use this value to encode the priority of generated measurement frames (OAM PDU frames.). The EMF usese this value to assign the P parameter of the measurement operation.				
testIdentifier	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY ● OpenInterfaceModelAttribute ● AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute is used to distinguish each measurement session if multiple measurement sessions are simultaneously activated towards a peer MEP including concurrent on-demand and proactive tests. It must be unique at least within the context of any measurement type for the MEG and initiating MEP. Note: The attribute is not used in case of 2-way loss measurement.			
messagePeriod	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute indicates the period (frequency) of the measurement frame transmission. Note that the value 0 means that only one OAM message per measurement interval is generated. Unit is milliseconds.			
measurementInterval	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed (i.e., OAM messages are generated) and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.			
repetitionPeriod	RepetitionPeriod	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute contains the time between the start of two measurement intervals. This IS applicable for the repetitive instance type and MAY be applicable for the repetitive series type. Note that a value of 0 means not applicable (NA), which is for the cases of single instance, single series, or repetitive series without extra gap in between the measurement intervals (i.e., also as known as continuous series).			
timeOfTheDayAlignment	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: MEF 35.1: [D7] A SOAM PM Implementation SHOULD allow for no alignment to the time-of-day clock.			
offsetFromTimeOfTheDay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: MEF 35.1: [D8] A SOAM PM Implementation SHOULD support a configurable (in minutes) offset from ToD time for alignment of the start of Measurement Intervals other than the first Measurement Interval.			
flrAvailabilityDeltaTime	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Time length over which each Availability Frame Loss Ratio value is calculated. MEF 35.1: [R78]/[CR58] [O8] A SOAM PM Implementation MUST support a configurable parameter for the length of time over which each Availability flr value is calculated, with a range of 1s – 300s. This parameter is equivalent to delta-t as specified by MEF 10.3. [R79]/[CR59] [O8] The length of time over which each Availability flr value is calculated (delta-t) MUST be an integer multiple of the interval between each SLM/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s.			
flrAvailabilityThreshold	Real	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each time interval (as specified by Availability Delta Time). MEF 35.1: [R81]/[CR61] A SOAM PM Implementation MUST support a configurable Availability frame loss ratio threshold to be used in evaluating the Available/Unavailable state of each delta-t interval per MEF 10.3 [R82]/[CR62] The Availability frame loss ratio threshold range of 0.00 through 1.00 MUST be supported in increments of 0.01. [D33]/[CD18] [O8] The default Availability frame loss ratio threshold SHOULD be 0.1.			
flrAvailabilitySamples	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Number of consecutive Availability Frame Loss Ratio measurements to be used to determine Available/Unavailable state transitions. MEF 35.1: [R80]/[CR60] [O8] The number range of 1 through 10 MUST be supported for the configurable number of consecutive Availability flr measurements to be used to determine Available/Unavailable state transitions. This parameter is equivalent to the Availability parameter of n as specified by MEF 10.3. [D32]/[CD17] [O8] The default number of n for Availability SHOULD be 10.			

5.2.46 EthProActiveSingleEndedMeasurementJob

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethProActiveMeasurementJobControlSource	EthProActiveMeasurementJobControlSource	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

5.2.47 EthServiceInterfacePointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
phyType	EtyPhyType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the PHY type of the ETY trail termination. See IEEE 802.3 clause 30.3.2.1.2.				
phyTypeList	EtyPhyType	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the possible PHY types that could be supported at the ETY trail termination. See IEEE 802.3 clause 30.3.2.1.3.				

5.2.48 EthTerminationCommonPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
priorityRegenerate	PriorityMapping	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_P_Regenerate information defined in G.8021.				
priorityCodePointConfig	PcpCoding	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_PCP_Config information defined in G.8021.				

Attribute Name	Type	Mult.	Access	Stereotypes
etherType	VlanType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_Etype information defined in G.8021.				
frametypeConfig	FrameType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_Frametype_Config information defined in G.8021.				
filterConfig1	MacAddress	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_Filter_Config information defined in G.8021. It indicates the configured filter action for each of the 33 group MAC addresses for control frames. The 33 MAC addresses are: 01-80-C2-00-00-10, 01-80-C2-00-00-00 to 01-80-C2-00-00-0F, and 01-80-C2-00-00-20 to 01-80-C2-00-00-2F. The filter action is Pass or Block. If the destination address of the incoming ETH_CI_D matches one of the above addresses, the filter process shall perform the corresponding configured filter action. If none of the above addresses match, the ETH_CI_D is passed.				
portVid	Vid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute models the ETHx/ETH-m_A_Sk_MI_PVID information defined in G.8021.				

5.2.49 EthTerminationPac

This object class models the Ethernet Flow Termination function located at a layer boundary.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethTerminationCommonPac	EthTerminationCommonPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

5.2.50 EthTestJob

This class represents the 1-way on-demand in-service or out-of-service diagnostic test. The diagnostic test includes verifying bandwidth throughput, frame loss, bit errors, etc. TST frames are transmitted. The termination occurs at specified stop time (schedule attribute of OamJob).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_ethOamTestLoopbackCommonPac	EthOamTestLoopbackCommonPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
testPattern	TestPattern	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description: G.8052: This parameter provides the test pattern to be used in the optional Data TLV. Examples of test patterns include pseudo-random bit sequence (PRBS) $2^{31}-1$ as specified in clause 5.8 of [ITU-T O.150], all '0' pattern, etc.				
destinationAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description: G.8052: This parameter provides the destination address, i.e., the MAC Address of the target MEP or MIP.				
_ethTestJobSinkPoint	EthTestJobSinkPoint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
number	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This parameter specifies how many TST messages to be sent.

5.2.51 EthTestJobSinkPoint

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
sourceAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA Description: This attribute contains the MAC address of the peer MEP.

5.2.52 EthTestResultData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
sentTstFrames	Integer	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA Description: G.8052: This parameter returns the total number of sent TST frames. Optional in case of sink only MEP.
recTstFrames	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: Received TST frames. Optional in case of source only MEP.				

5.2.53 EtyPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
phyType	EtyPhyType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: This attribute identifies the PHY type of the ETY trail termination. See IEEE 802.3 clause 30.3.2.1.2.				
phyTypeList	EtyPhyType	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: This attribute identifies the possible PHY types that could be supported at the ETY trail termination. See IEEE 802.3 clause 30.3.2.1.3.				

5.2.54 EtyTerminationCommonPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
isFtsEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description: This attribute indicates whether Forced Transmitter Shutdown (FTS) is enabled or not. It models the ETYn_TT_So_MI_FTSEnable information.				

Attribute Name	Type	Mult.	Access	Stereotypes
isTxPauseEnabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

5.2.55 EtyTerminationPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_etyTerminationCommonPac	EtyTerminationCommonPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

phyType	EtyPhyType	1	R	OpenModelAttribute
				<ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

phyTypeList	EtyPhyType	0..*	R	OpenModelAttribute
				<ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

5.2.56 TrafficConditioningPac

This object class models the ETH traffic conditioning function as defined in G.8021.

Basic attributes: codirectional, condConfigList, prioConfigList

Applied stereotypes:

- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
prioConfigList	PriorityConfiguration	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute indicates the Priority Splitter function for the mapping of the Ethernet frame priority (ETH_CI_P) values to the output queue.			
condConfigList	TrafficConditioningConfiguration	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute indicates for the conditioner process the conditioning parameters: - Queue ID: Indicates the Queue ID - Committed Information Rate (CIR): number of bits per second - Committed Burst Size (CBS): number of bytes - Excess Information Rate (EIR): number of bits per second - Excess Burst Size (EBS): number of bytes - Coupling flag (CF): 0 or 1 - Color mode (CM): color-blind and color-aware.			
codirectional	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute indicates the direction of the conditioner. The value of true means that the conditioner (modeled as a TCS Sink according to G.8021) is associated with the sink part of the containing CTP. The value of false means that the conditioner (modeled as a TCS Sink according to G.8021) is associated with the source part of the containing CTP.			

5.2.57 TrafficShapingPac

This object class models the ETH traffic shaping function as defined in G.8021.

Basic attribute: codirectional, prioConfigList, queueConfigList, schedConfig

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
prioConfigList	PriorityConfiguration	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute configures the Priority Splitter function for the mapping of the Ethernet frame priority (ETH_CI_P) values to the output queue.			
queueConfigList	QueueConfiguration	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute configures the Queue depth and Dropping threshold parameters of the Queue process. The Queue depth sets the maximum size of the queue in bytes. An incoming ETH_CI traffic unit is dropped if there is insufficient space in the queue to hold the whole unit. The Dropping threshold sets the threshold of the queue. If the queue is filled beyond this threshold, incoming ETH_CI traffic units accompanied by the ETH_CI_DE signal set are dropped.			
schedConfig	SchedulingConfiguration	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute configures the scheduler process. The value of this attribute is for further study because it is for further study in G.8021. Scheduler is a pointer to a Scheduler object, which is to be defined in the future (because in G.8021, this is FFS). Note that the only significance of the GTCS function defined in G.8021 is the use of a common scheduler for shaping. Given that, G.8052 models the common scheduler feature by having a common value for this attribute.			
codirectional	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute indicates the direction of the shaping function. The value of true means that the shaping (modeled as a TCS Source according to G.8021) is associated with the source part of the containing CTP. The value of false means that the shaping (modeled as a TCS Source according to G.8021) is associated with the sink part of the containing CTP.			

5.3 Associations

5.3.1 EthCepSpecHasCtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCtp	composite	Yes	EthCtpPac	0..1
_lpSpec	none	No	EthConnectionEndPointSpec	1

5.3.2 EthCepSpecHasTermPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethTerm	composite	Yes	EthTerminationPac	0..1
_lpSpec	none	No	EthConnectionEndPointSpec	1

5.3.3 EthCsepSpecHasEthCtpCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
ethCtpCommonPac	none	Yes	EthCtpCommonPac	0..1
ethconnectivityserviceendpointspec	none	No	EthConnectivityServiceEndPointSpec	1

5.3.4 EthCsepSpecHasEthTerminationCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
ethTerminationCommonPac	none	Yes	EthTerminationCommonPac	0..1
ethconnectivityserviceendpointspec	none	No	EthConnectivityServiceEndPointSpec	1

5.3.5 EthCsepSpecHasEtyTerminationCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
etyTerminationCommonPac	none	Yes	EtyTerminationCommonPac	0..1
ethconnectivityserviceendpointspec	none	No	EthConnectivityServiceEndPointSpec	1

5.3.6 EthCtpCommonPacHasTrafficCondPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
trafficConditioningPac	composite	Yes	TrafficConditioningPac	0..1
connectionpointandadapterspec_tapi_eth	none	No	EthCtpCommonPac	1

5.3.7 EthCtpCommonPacHasTrafficShapingPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
trafficShapingPac	composite	Yes	TrafficShapingPac	0..1
connectionpointandadapterspec_tapi_eth	none	No	EthCtpCommonPac	1

5.3.8 EthCtpPacHasEthCtpCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
ethCtpCommonPac	none	Yes	EthCtpCommonPac	1
ethctppac	none	No	EthCtpPac	1

5.3.9 EthLinkTraceJobHasEthCfmLinkTracePac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmLinkTracePac	composite	Yes	EthCfmLinkTracePac	0..1
ethlinktracejob	none	No	EthLinkTraceJob	1

5.3.10 EthLinkTraceResultDataHasEthCfmLinkTraceResultData

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmLinkTraceResultData	composite	Yes	EthCfmLinkTraceResultData	0..*
ethlinktraceresultdata	none	No	EthLinkTraceResultData	1

5.3.11 EthLoopbackJobHasEthOamTestLoopbackCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethOamTestLoopbackCommonPac	composite	Yes	EthOamTestLoopbackCommonPac	0..1
ethloopbackjob	none	No	EthLoopbackJob	1

5.3.12 EthMegSpecHasEthCfmMaintenanceAssociation

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmMaintenanceAssociation	composite	Yes	EthCfmMaintenanceAssociation	0..1
ethmegspec	none	No	EthMegSpec	1

5.3.13 EthMegSpecHasEthCfmMaintenanceDomain

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmMaintenanceDomain	composite	Yes	EthCfmMaintenanceDomain	0..1
ethmegspec	none	No	EthMegSpec	1

5.3.14 EthMegSpecHasEthMegCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMegCommon	composite	Yes	EthMegCommon	1
ethmegspec	none	No	EthMegSpec	1

5.3.15 EthMepSpecHasEthMepCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepCommon	composite	Yes	EthMepCommon	1
ethmepspec	none	No	EthMepSpec	1

5.3.16 EthMepSpecHasEthMepSink

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepSink	composite	Yes	EthMepSink	0..1
ethmepspec	none	No	EthMepSpec	1

5.3.17 EthMepSpecHasMepSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepSource	composite	Yes	EthMepSource	0..1
ethmepspec	none	No	EthMepSpec	1

5.3.18 EthMipSpecHasEthMipCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMipCommon	composite	Yes	EthMipCommon	1
ethmipspec	none	No	EthMipSpec	1

5.3.19 EthNepSpecHasEtyTermPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_etyTerm	composite	Yes	EtyTerminationPac	0..1
lpSpec	none	No	EthConnectionEndPointSpec	1

5.3.20 EthOamMepServicePointHasEthMepCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepCommon	composite	Yes	EthMepCommon	1
ethoammepservicepoint	none	No	EthOamMepServicePoint	1

5.3.21 EthOamMepServicePointHasEthMepSink

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepSink	composite	Yes	EthMepSink	0..1
ethoammeplservicepoint	none	No	EthOamMepServicePoint	1

5.3.22 EthOamMepServicePointHasEthMepSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMepSource	composite	Yes	EthMepSource	0..1
ethoammeplservicepoint	none	No	EthOamMepServicePoint	1

5.3.23 EthOamMipServicePointHasEthMipCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMipCommon	composite	Yes	EthMipCommon	0..1
ethoammpipservicepoint	none	No	EthOamMipServicePoint	1

5.3.24 EthOamServiceHasEthCfmMaintenanceAssociation

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmMaintenanceAssociation	composite	Yes	EthCfmMaintenanceAssociation	0..1
ethoamservice	none	No	EthOamService	1

5.3.25 EthOamServiceHasEthCfmMaintenanceDomain

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethCfmMaintenanceDomain	composite	Yes	EthCfmMaintenanceDomain	0..1
ethoamservice	none	No	EthOamService	1

5.3.26 EthOamServiceHasEthMegCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethMegCommon	composite	Yes	EthMegCommon	1
ethoamservice	none	No	EthOamService	1

5.3.27 EthOnDemandDualEndedHasJobControlSink

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethOnDemandMeasurementJobControlSink	composite	Yes	EthOnDemandMeasurementJobControlSink	0..1
ethondemand1waymeasurementjob	none	No	EthOnDemandDualEndedMeasurementJob	1

5.3.28 EthOnDemandDualEndedHasJobControlSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethOnDemandMeasurementJobControlSource	composite	Yes	EthOnDemandMeasurementJobControlSource	0..1
ethondemand1waymeasurementjob	none	No	EthOnDemandDualEndedMeasurementJob	1

5.3.29 EthOnDemandSingleEndedHasJobControlSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
ethOnDemandMeasurementJobControlSource	composite	Yes	EthOnDemandMeasurementJobControlSource	1
ethondemand2waymeasurementjob	none	No	EthOnDemandSingleEndedMeasurementJob	1

5.3.30 EthProActiveDualEndedHasJobControlSink

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethProActiveMeasurementJobControlSink	composite	Yes	EthProActiveMeasurementJobControlSink	0..1
eth1waydelaymeasurementproactivejob	none	No	EthProActiveDualEndedMeasurementJob	1

5.3.31 EthProActiveDualEndedHasJobControlSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
ethProActiveMeasurementJobControlSource	composite	Yes	EthProActiveMeasurementJobControlSource	0..1
eth1waydelaymeasurementproactivejob	none	No	EthProActiveDualEndedMeasurementJob	1

5.3.32 EthProActiveSingleEndedHasJobControlSource

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethProActiveMeasurementJobControlSource	composite	Yes	EthProActiveMeasurementJobControlSource	1
ethframedelay2wayproactivejob	none	No	EthProActiveSingleEndedMeasurementJob	1

5.3.33 EthTerminationPacHasEthTerminationCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethTerminationCommonPac	none	Yes	EthTerminationCommonPac	1
ethterminationpac	none	No	EthTerminationPac	1

5.3.34 EthTestJobHasEthOamTestLoopbackCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethOamTestLoopbackCommonPac	composite	Yes	EthOamTestLoopbackCommonPac	0..1
ethtestspec	none	No	EthTestJob	1

5.3.35 EthTestJobHasEthTestJobSinkPoint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ethTestJobSinkPoint	composite	Yes	EthTestJobSinkPoint	0..1
ethtestjob	none	No	EthTestJob	1

5.3.36 EtyTerminationPacHasEtyTerminationCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
etyTerminationCommonPac	composite	Yes	EtyTerminationCommonPac	1
etyterminationpac	none	No	EtyTerminationPac	1

5.4 Data Types

5.4.1 AddressTuple

This data type contains an address tuple consisting of a MAC address and a corresponding port list.

Attribute Name	Type	Mult.	Access	Stereotypes
address	MacAddress	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the MAC address of the address tuple.				
portList	MacAddress	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the ports associated to the MAC address in the address tuple.				

5.4.2 BandwidthProfile

Attribute Name	Type	Mult.	Access	Stereotypes
bwProfileType	BandwidthProfileType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
committedInformationRate	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
committedBurstSize	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
peakInformationRate	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
peakBurstSize	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
colorAware	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
couplingFlag	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

5.4.3 BandwidthReport

Data type for the bandwidth report.

Attribute Name	Type	Mult.	Access	Stereotypes
sourceMacAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The sourceMacAddress is the address from the far end.			
portId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute returns the far end port identifier.			
nominalBandwidth	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute returns the configured bandwidth			
currentBandwidth	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute returns the current bandwidth.			

5.4.4 ControlFrameFilter

This data type identifies the filter action for each of the 33 group MAC addresses (control frames). Value "false" means block: The frame is discarded by the filter process. Value "true" means pass: The frame is passed unchanged through the filter process.

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-10	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute identifies the "All LANs Bridge Management Group Address".			

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-00	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the STP/RSTP/MSTP protocol address.				
01-80-C2-00-00-01	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the IEEE MAC-specific Control Protocols group address (PAUSE protocol).				
01-80-C2-00-00-02	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the IEEE 802.3 Slow_Protocols_Multicast address (LACP/LAMP or Link OAM protocols).				
01-80-C2-00-00-03	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the Nearest non-TPMR Bridge group address (Port Authentication protocol).				
01-80-C2-00-00-04	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the IEEE MAC-specific Control Protocols group address.				
01-80-C2-00-00-05	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-06	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-07	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the Metro Ethernet Forum E-LMI protocol group address.				
01-80-C2-00-00-08	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the Provider Bridge Group address.				
01-80-C2-00-00-09	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-0A	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-0B	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-0C	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-0D	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute identifies the Provider Bridge MVRP address.				

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-0E	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the Individual LAN Scope group address, Nearest Bridge group address (LLDP protocol).				
01-80-C2-00-00-0F	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-20	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the Customer and Provider Bridge MMRP address.				
01-80-C2-00-00-21	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute identifies the Customer Bridge MVRP address.				
01-80-C2-00-00-22	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-23	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-24	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-25	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-26	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-27	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-28	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-29	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-2A	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			
01-80-C2-00-00-2B	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Reserved for future standardization.			

Attribute Name	Type	Mult.	Access	Stereotypes
01-80-C2-00-00-2C	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-2D	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-2E	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				
01-80-C2-00-00-2F	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Reserved for future standardization.				

5.4.5 LinkTraceResult

G.8052: This data type contains the result from an individual LTR frame.

Attribute Name	Type	Mult.	Access	Stereotypes
sourceAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This attribute contains the source MAC Address of an individual LTR frame result.				
timeToLive	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
G.8052: This attribute contains the Time To Live (TTL) value of an individual LTR frame result.				

Attribute Name	Type	Mult.	Access	Stereotypes
dataTlvLength	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

5.4.6 LldpChassisIdSubtype

MEF 38: The chassis-id-subtype contains the chassis ID entity that is listed in the chassis ID field. This is a combination of the 'Chassis ID Subtype' and 'chassis ID' fields.

Attribute Name	Type	Mult.	Access	Stereotypes
chassisComponent	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	String length "0..32" Represents a chassis identifier based on the value of entPhysicalAlias object (defined in IETF RFC 2737) for a chassis component (i.e., an entPhysicalClass value of chassis(3)).			
interfaceAlias	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	String length "0..64" Represents a chassis identifier based on the value of ifAlias object (defined in IETF RFC 2863) for an interface on the containing chassis.			
portComponent	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	String length "0..32" Represents a chassis identifier based on the value of entPhysicalAlias object (defined in IETF RFC 2737) for a port or backplane component (i.e., entPhysicalClass value of port(10) or backplane(4)), within the containing chassis.			
macAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	Represents a chassis identifier based on the value of a unicast source address (encoded in network byte order and IEEE 802.3 canonical bit order), of a port on the containing chassis as defined in IEEE Std 802-2001.			
networkAddress	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Octet string that identifies a particular network address family and an associated network address that are encoded in network octet order. An IP address, for example, would be encoded with the first octet containing the IANA Address Family Numbers enumeration value for the specific address type and octets 2 through n containing the address value.			
interfaceName	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Represents a chassis identifier based on the value of ifName object (defined in IETF RFC 2863) for an interface on the containing chassis.			
local	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Represents a chassis identifier based on a locally defined value.			

5.4.7 LldpPortIdSubtype

IEEE P802.1Qcx/D0.3: The source of a particular type of port identifier used in the LLDP YANG module.
 MEF 38: Data definitions associated with the Port ID TLV.

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: String			
interfaceAlias	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: String length "0..64" Represents a port identifier based on the ifAlias MIB object, defined in IETF RFC 2863.			
portComponent	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: String length "0..32" Represents a port identifier based on the value of entPhysicalAlias (defined in IETF RFC 2737) for a port component (i.e., entPhysicalClass value of port(10)), within the containing chassis.			
macAddress	MacAddress	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Represents a port identifier based on a unicast source address (encoded in network byte order and IEEE 802.3 canonical bit order), which has been detected by the agent and associated with a particular port (IEEE Std 802-2001).			

Attribute Name	Type	Mult.	Access	Stereotypes
networkAddress	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			Represents a port identifier based on a network address, detected by the agent and associated with a particular port. Octet string that identifies a particular network address family and an associated network address that are encoded in network octet order. An IP address, for example, would be encoded with the first octet containing the IANA Address Family Numbers enumeration value for the specific address type and octets 2 through n containing the address value.
interfaceName	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			String length "0..64" Represents a port identifier based on the ifName MIB object, defined in IETF RFC 2863.
agentCircuitId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			Represents a port identifier based on the agent-local identifier of the circuit (defined in RFC 3046), detected by the agent and associated with a particular port.
local	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			Represents a port identifier based on a value locally assigned.

5.4.8 MaintenanceAssociationName

Attribute Name	Type	Mult.	Access	Stereotypes
ieeeReserved	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			IEEE P802.1Qcx/D0.3: Reserved for definition by IEEE 802.1. Recommend not to use zero unless absolutely needed. Length "1..45".
primaryVlanId	Vid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			IEEE P802.1Qcx/D0.3: MEF 38: Primary VLAN ID. 12 bits represented in a 2-octet integer.

Attribute Name	Type	Mult.	Access	Stereotypes
charString	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				IEEE P802.1Qcx/D0.3: MEF 38: RFC2579 DisplayString, except that the character codes 0-31 (decimal) are not used. Length "1..45"
Description:				
unsignedInt16	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				IEEE P802.1Qcx/D0.3: MEF 38: 2-octet integer/big endian.
Description:				
rfc2865VpnId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				IEEE P802.1Qcx/D0.3: MEF 38: RFC2685 VPN ID. 3 octet VPN authority Organizationally Unique Identifier followed by 4 octet VPN index identifying VPN according to the OUI. Length "1..45";
Description:				
iccFormat	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				IEEE P802.1Qcx/D0.3: ICC-based format as specified in ITU-T Y.1731. Length "1..45"

5.4.9 ModifyCrossConnectionData

5.4.10 PriorityConfiguration

Attribute Name	Type	Mult.	Access	Stereotypes
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
queueId	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

5.4.11 PriorityMapping

This data type provides the priority mapping done in the "P Regenerate" process defined in G.8021.

Attribute Name	Type	Mult.	Access	Stereotypes
Priority0	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 0.				
Priority1	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 1.				
Priority2	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 2.				
Priority3	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 3.				
Priority4	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 4.				
Priority5	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute defines the new priority value for the old priority value 5.				
Priority6	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute defines the new priority value for the old priority value 6.			
Priority7	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute defines the new priority value for the old priority value 7.			

5.4.12 QueueConfiguration

Attribute Name	Type	Mult.	Access	Stereotypes
queueId	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute indicates the queue id.			
queueDepth	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute defines the depth of the queue in bytes.			
queueThreshold	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute defines the threshold of the queue in bytes.			

5.4.13 SamplesDmPerformanceParameters

This data type contains the results of an on-demand delay measurement job.

Attribute Name	Type	Mult.	Access	Stereotypes
numberOfSamples	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute contains the number of received DM frames (successful samples) used for this frame delay measurement.			

Attribute Name	Type	Mult.	Access	Stereotypes
frameDelayList	Integer	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute contains the frame delays measured in ns (nano second, 1x10e-9 seconds). The multiplicity is defined by the numberOfSamples attribute.
frameDelayVariationList	Integer	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute contains the frame delay variations measured in ns (nano second). The multiplicity is defined by (numberOfSamples - 1, for numberOfSamples > 0).

5.4.14 SchedulingConfiguration

The syntax of this dataType is pending on the specification in G.8021, which is for further study.

5.4.15 StatisticalDmPerformanceParameters

This data type contains the statistical delay measurement performance parameters.

Attribute Name	Type	Mult.	Access	Stereotypes
minimumFrameDelay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute contains the minimum frame delay observed over the monitored period. It is measured in units of ns (nano second, 1x10e-9 seconds).
averageFrameDelay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute contains the average frame delay observed over the monitored period. It is measured in units of ns (nano second, 1x10e-9 seconds).
maximumFrameDelay	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				This attribute contains the maximum frame delay observed over the monitored period. It is measured in units of ns (nano second, 1x10e-9 seconds).

Attribute Name	Type	Mult.	Access	Stereotypes
minimumFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	<p>This attribute contains the minimum frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). Y.1563: The 2-point frame delay variation (vk) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (xk) of frame k and a defined reference Ethernet frame transfer delay, d1,2, between those same MPs: $vk = xk - d1,2$.</p>			
averageFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the average frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). Y.1563: The 2-point frame delay variation (vk) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (xk) of frame k and a defined reference Ethernet frame transfer delay, d1,2, between those same MPs: $vk = xk - d1,2$.</p>			
maximumFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the maximum frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). Y.1563: The 2-point frame delay variation (vk) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (xk) of frame k and a defined reference Ethernet frame transfer delay, d1,2, between those same MPs: $vk = xk - d1,2$.</p>			
minimumInterFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the minimum frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames</p>			
averageInterFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	<p>This attribute contains the average frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames</p>			
maximumInterFrameDelayVariation	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>This attribute contains the maximum frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames</p>				

5.4.16 StatisticalLmPerformanceParameters

This data type contains the statistical loss measurement performance parameters.

Attribute Name	Type	Mult.	Access	Stereotypes
minimumFrameLossRatio	Real	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
<p>Description:</p> <p>This attribute contains the minimum frame loss ratio calculated over a period of time.</p>				
averageFrameLossRatio	Real	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
<p>Description:</p> <p>This attribute contains the average frame loss ratio calculated over a period of time.</p>				
maximumFrameLossRatio	Real	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
<p>Description:</p> <p>This attribute contains the maximum frame loss ratio calculated over a period of time.</p>				
hliCount	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
<p>Description:</p> <p>A generalized SES. MEF 10.3: The Resiliency attributes are similar to the definitions of Severely Errored Seconds (SES) and Consecutive SES in section 9 and Annex B (respectively) of Y.1563 [6], when delta-t = 1 second. MEF 35.1: Count of High Loss Intervals during the Measurement Interval.</p>				
unavailableIntervals	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
<p>Description:</p> <p>A generalized UAS. MEF 35.1: A 32-bit counter reflecting the number of delta-t intervals evaluated as Unavailable (i.e., for which A<Controller, Responder>(delta-t) = 0).</p>				

5.4.17 TotalCountersLmPerformanceParameters

This data type contains the results of an on-demand loss measurement job.

Attribute Name	Type	Mult.	Access	Stereotypes
totalTransmittedFrames	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the total number of frames transmitted.				
totalLostFrames	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the total number of frames lost.				
totalFrameLossRatio	Real	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute contains the frame loss ratio (number of lost frames divided by the number of total frames (N_LF / N_TF)). The accuracy of the value is for further study.				

5.4.18 TrafficConditioningConfiguration

Attribute Name	Type	Mult.	Access	Stereotypes
cir	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the Committed Information Rate in bits/s.				
cbs	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the Committed Burst Size in bytes.				
eir	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the Excess Information Rate in bits/s.				

Attribute Name	Type	Mult.	Access	Stereotypes
ebs	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the Excess Burst Size in bytes.				
couplingFlag	Boolean	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the coupling flag.				
colourMode	ColourMode	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the colour mode.				
queueId	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the queue id.				

5.5 Enumerations

5.5.1 AdminState

Contains Enumeration Literals:

- LOCK:
- NORMAL:

5.5.2 AssociationIdPermissionTypes

IEEE P802.1Qcx/D0.3: MEF 38: Indicates what, if anything, is to be included in the Sender ID TLV transmitted in CCMs, LBMs, LTMs, and LTRs.

Contains Enumeration Literals:

- SEND-ID-DEFER:
 - IEEE P802.1Qcx/D0.3: MEF 38: The content of the Sender ID TLV are determined by the corresponding Maintenance Domain variable.

5.5.3 BandwidthProfileType

Contains Enumeration Literals:

- MEF_10.x:
- RFC_2697:
- RFC_2698:
- RFC_4115:

5.5.4 ColourMode

Contains Enumeration Literals:

- COLOUR_BLIND:
- COLOUR_AWARE:

5.5.5 CsfConfig

Contains Enumeration Literals:

- DISABLED:
 - This literal covers the following states of the CSF related MI informations: - MI_CSF_Enable is false - MI_CSFrdfdi_Enable is false - MI_CSFdci_Enable is false.
- ENABLED:
 - This literal covers the following states of the CSF related MI informations: - MI_CSF_Enable is true - MI_CSFrdfdi_Enable is false - MI_CSFdci_Enable is false.
- ENABLED_WITH_RDI_FDI:
 - This literal covers the following states of the CSF related MI informations: - MI_CSF_Enable is true - MI_CSFrdfdi_Enable is true - MI_CSFdci_Enable is false.
- ENABLED_WITH_RDI_FDI_DCI:
 - This literal covers the following states of the CSF related MI informations: - MI_CSF_Enable is true - MI_CSFrdfdi_Enable is true - MI_CSFdci_Enable is true.
- ENABLED_WITH_DCI:
 - This literal covers the following states of the CSF related MI informations: - MI_CSF_Enable is true - MI_CSFrdfdi_Enable is false - MI_CSFdci_Enable is true.

5.5.6 EthAlarmConditionName

Contains Enumeration Literals:

- LOSS_OF_CONTINUITY:
 - G.8021: The loss of continuity defect is calculated at the ETH layer. It monitors the presence of continuity in ETH trails.
- UNEXPECTED_MEL:
 - G.8021: Reception of a CCM frame with an invalid MEL value. Monitoring of the connectivity in a maintenance entity group.
- UNEXPECTED MEP:
 - G.8021: Reception of a CCM frame with an invalid MEP value, but with valid MEL and MEG values. Monitoring of the connectivity in a maintenance entity group.
- MISMERGE_UNEXPECTED_MEG:
 - G.8021: Reception of a CCM frame with an invalid MEG value, but with a valid MEL value. Monitoring of the connectivity in a maintenance entity group.
- UNEXPECTED_PERIODICITY:
 - G.8021: Reception of a CCM frame with an invalid periodicity value, but with valid MEL, MEG and MEP values. It detects the configuration of different periodicities at different MEPs belonging to the same MEG.
- UNEXPECTED_PRIORITY:

- G.8021: Reception of a CCM frame with an invalid priority value, but with valid MEL, MEG, MEP and periodicity values. It detects the configuration of different priorities for CCM at different MEPs belonging to the same MEG.
- LOCKED:
 - G.8021: Reception of a LCK frame.
- AIS:
 - G.8021: Reception of an AIS frame.
- DEGRADED:
 - G.8021: The defect is detected if there are MI_LM_DEGM (lmDegm of EthMepSink) consecutive bad seconds and cleared if there are MI_LM_M (lmM of EthMepSink) consecutive good seconds. In order to declare a bad second the number of transmitted frames must exceed a threshold (MI_LM_TFMIN, lmTfMin of EthMepSink). Furthermore, if the frame loss ratio (lost frames/transmitted frames) is greater than MI_LM_DEGTHR (lmDegThr of EthMepSink), a bad second is declared. This defect is only defined for point-to-point ETH connections. It monitors the connectivity of an ETH trail.
- RDI:
 - G.8021: Remote defect indicator defect, reception by an MEP (indexed by "i", this index not included in the "cause" cRDI) of a CCM frame with valid MEL, MEG, MEP and periodicity values and the RDI flag set to x; where x=0 (remote defect clear) and x=1 (remote defect set).
- CSF:
 - G.8021 - ETH layer: Reception of a CSF frame that indicates a client loss of signal (dCSF-LOS) or a client forward defect indication (dCSF-FDI) or a client reverse defect indication (dCSF-RDI). The CSF (CSF-LOS, CSF-FDI, and CSF-RDI) defect is calculated at the ETH layer. It monitors the presence of a CSF maintenance signal. G.8021 - GFP: dCSF is Client-specific GFP-F and GFP-T (resp. Frame and Transparent) sink processes. dCSF-RDI: GFP client signal fail-remote defect indication is raised when a GFP client management frame with the RDI UPI (as defined in Table 6-4 of [ITU-T G.7041]) is received. dCSF-RDI is cleared when no such GFP client management frame is received in N x 1000 ms (a value of 3 is suggested for N), a valid GFP client data frame is received, or a GFP client management frame with the DCI UPI is received. dCSF-FDI: GFP client signal fail-forward defect indication is raised when a GFP client management frame with the FDI UPI (as defined in Table 6-4 of [ITU-T G.7041]) is received. dCSF-FDI is cleared when no such GFP client management frame is received in N x 1000 ms (a value of 3 is suggested for N), a valid GFP client data frame is received, or a GFP client management frame with the DCI UPI is received. dCSF-LOS: GFP client signal fail-loss of signal is raised when a GFP client management frame with the LOS UPI (as defined in Table 6-4 of [ITU-T G.7041]) is received. dCSF-LOS is cleared when no such GFP client management frame is received in N x 1000 ms (a value of 3 is suggested for N), a valid GFP client data frame is received, or a GFP client management frame with the DCI UPI is received.
- TOTAL_LINK_LOSS:
 - G.8021: LAG - fault cause will be raised if no ports are active for an aggregator.
- PARTIAL_LINK_LOSS:
 - G.8021: LAG - fault cause shall be raised if the number of active ports is less than the provisioned threshold.
- PLM:
 - G.806: The payload label mismatch defect (dPLM) shall be detected if the "accepted TSL" code does not match the "expected TSL" code. If the "accepted TSL" is "equipped non-specific", the mismatch is not detected (TSL: Trail Signal Label). Payload type supervision checks that compatible adaptation functions are used at the source and the sink. This is normally done by adding a signal type identifier at the source adaptation function and comparing it with the expected identifier at the sink. If they do not match, a payload mismatch is detected.
- LFD:

- G.806 - Server layer-specific GFP sink processes: GFP loss of frame delineation (dLFD) is raised when the frame delineation process (clause 6.3.1 of [ITU-T G.7041]) is not in the "SYNC" state. dLFD is cleared when the frame delineation process is in the "SYNC" state.
- EXM:
 - G.806 - Common GFP sink processes: GFP extension header mismatch (dEXM) is raised when the accepted EXI (AcEXI) is different from the expected EXI. dEXM is cleared when AcEXI matches the expected EXI or GFP_SF is active.
- UPM:
 - G.806 - Client-specific GFP-F (Frame) and GFP-T (Transparent) sink processes: GFP user payload mismatch (dUPM) is raised when the accepted UPI (AcUPI) is different from the expected UPI. dUPM is cleared when AcUPI matches the expected UPI or GFP_SF is active.

5.5.7 EthOamJobType

Contains Enumeration Literals:

- ETH_1DM:
- ETH_1SLM:
- ETH_LM_CCM:
- ETH_LM_LMM:
- ETH_SLM:
- ETH_DM:
- ETH_LTC:
- ETH_LBK:
- ETH_TEST:

5.5.8 EthPmParameterName

Contains Enumeration Literals:

- MINIMUM_FRAME_DELAY:
- MAXIMUM_FRAME_DELAY:
- AVERAGE_FRAME_DELAY:
- MINIMUM_FRAME_DELAY_VARIATION:
 - This attribute contains the minimum frame delay variation measured in units of ns (nano second, 1×10^{-9} seconds). Y.1563: The 2-point frame delay variation (v_k) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (x_k) of frame k and a defined reference Ethernet frame transfer delay, $d_{1,2}$, between those same MPs: $v_k = x_k - d_{1,2}$.
- MAXIMUM_FRAME_DELAY_VARIATION:
 - This attribute contains the maximum frame delay variation measured in units of ns (nano second, 1×10^{-9} seconds). Y.1563: The 2-point frame delay variation (v_k) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (x_k) of frame k and a defined reference Ethernet frame transfer delay, $d_{1,2}$, between those same MPs: $v_k = x_k - d_{1,2}$.
- AVERAGE_FRAME_DELAY_VARIATION:
 - This attribute contains the average frame delay variation measured in units of ns (nano second, 1×10^{-9} seconds). Y.1563: The 2-point frame delay variation (v_k) for an Ethernet frame k between SRC and DST is the difference between the absolute Ethernet frame transfer delay (x_k) of frame k and a defined reference Ethernet frame transfer delay, $d_{1,2}$, between those same MPs: $v_k = x_k - d_{1,2}$.
- MINIMUM_INTER_FRAME_DELAY_VARIATION:
 - This attribute contains the minimum frame delay variation measured in units of ns (nano second, 1×10^{-9} seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames

- MAXIMUM_INTER_FRAME_DELAY_VARIATION:
 - This attribute contains the maximum frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames
- AVERAGE_INTER_FRAME_DELAY_VARIATION:
 - This attribute contains the average frame delay variation measured in units of ns (nano second, 1x10e-9 seconds). G.8013/Y.1731: Frame delay variation is a measure of the variations in the frame delay between a pair of service frames
- MINIMUM_FRAME_LOSS_RATIO:
- MAXIMUM_FRAME_LOSS_RATIO:
- AVERAGE_FRAME_LOSS_RATIO:
- HIGH_LOSS_INTERVALS:
- UNAVAILABLE_INTERVALS:

5.5.9 EtyPhyType

Contains Enumeration Literals:

- OTHER:
- UNKNOWN:
- NONE:
- 2BASE_TL:
- 10MBIT/S:
- 10PASS_TS:
- 100BASE_T4:
- 100BASE_X:
- 100BASE_T2:
- 1000BASE_X:
- 1000BASE_T:
- 10GBASE-X:
- 10GBASE_R:
- 10GBASE_W:

5.5.10 FrameType

Contains Enumeration Literals:

- ADMIT_ONLY_VLAN_TAGGED_FRAMES:
- ADMIT_ONLY_UNTAGGED_AND_PRIORITY_TAGGED_FRAMES:
- ADMIT_ALL_FRAMES:

5.5.11 LTMflags

IEEE 802.1Q 2018: In the LTM, the Flags field of the Common CFM Header specifies certain options.

Contains Enumeration Literals:

- USE-FDB-ONLY:
 - IEEE 802.1Q 2018: If set, indicates that only MAC addresses learned in a Bridge's FDB, and not information saved in the MIP CCM Database, is to be used to determine the Egress Port. Bit 8 (MSB).

5.5.12 LinkTraceEgressActionFieldValue

IEEE P802.1Qcx/D0.3: MEF 38: Possible values returned in the Egress Action field.

Contains Enumeration Literals:

- EGRESS-NO-TLV:
 - Indicates that no Reply Egress TLV was returned in the LTM.
- EGRESS-OK:
 - The targeted data frame would be forwarded.
- EGRESS-DOWN:
 - The Egress Port can be identified, but that Bridge Port MAC_Operational parameter is false.
- EGRESS-BLOCKED:
 - The Egress Port can be identified, but the data frame would not pass through the Egress Port due to active topology management (i.e., the Bridge Port is not in the Forwarding state).
- EGRESS-VID:
 - The Egress Port can be identified, but the Bridge Port is not in the LTMs VIDs member set, so would be filtered by egress filtering.

5.5.13 LinkTraceIngressActionFieldValue

IEEE P802.1Qcx/D0.3: MEF 38: Possible values returned in the ingress action field.

Contains Enumeration Literals:

- INGRESS-NO-TLV:
 - Indicates that no Reply Ingress TLV was returned in the LTM.
- INGRESS-OK:
 - The target data frame would be passed through to the MAC Relay Entity.
- INGRESS-DOWN:
 - The Bridge Ports MAC_Operational parameter is false.
- INGRESS-BLOCKED:
 - The target data frame would not be forwarded if received on this Port due to active topology enforcement.
- INGRESS-VID:
 - The ingress port is not in the member set of the LTMs VID, and ingress filtering is enabled, so the target data frame would be filtered by ingress filtering.

5.5.14 LinkTraceRelayActionFieldValue

IEEE P802.1Qcx/D0.3: MEF 38: Possible values the Relay action field can take.

Contains Enumeration Literals:

- RELAY-HIT:
 - The LTM reached a Maintenance Point whose MAC address matches the target address.
- RELAY-FDB:
 - The Egress Port was determined by consulting the Filtering Database.
- RELAY-MPDB:
 - The Egress Port was determined by consulting the MIP CCM Database.

5.5.15 MaintenanceDomainIdPermissionTypes

IEEE P802.1Qcx/D0.3: MEF 38: Indicates what, if anything, is to be included in the Sender ID TLV transmitted in CCMs, LBMs, LTMs, and LTRs.

Contains Enumeration Literals:

- SEND-ID-NONE:
 - The Sender ID TLV is not to be sent.

- SEND-ID-CHASSIS:
 - The Chassis ID Length, Chassis ID Subtype, and Chassis ID fields of the Sender ID TLV are to be sent.
- SEND-ID-MANAGE:
 - The Management Address Length and Management Address of the Sender ID TLV are to be sent.
- SEND-ID-CHASSIS-MANAGE:
 - The Chassis ID Length, Chassis ID Subtype, Chassis ID, Management Address Length and Management Address fields are all to be sent.

5.5.16 MaintenanceDomainNameType

IEEE P802.1Qcx/D0.3: MEF 38: The Maintenance Domain format choice.

Contains Enumeration Literals:

- NONE:
 - IEEE P802.1Qcx/D0.3: No format specified, usually because there is not a Maintenance Domain Name. In this case, a zero length OCTET string for the Domain name field is acceptable. MEF 38: No format specified.
- DOMAIN-NAME:
 - IEEE P802.1Qcx/D0.3: MEF 38: Domain Name like string, globally unique text string derived from a DNS name.
- MAC-ADDR-AND-UINT :
 - IEEE P802.1Qcx/D0.3: MEF 38: MAC address + 2-octet (unsigned) integer.
- STRING:
 - IEEE P802.1Qcx/D0.3: MEF 38: RFC2579 DisplayString, except that the character codes 0-31 (decimal) are not used.

5.5.17 MessagePeriod

This enumeration defines the allowed values for the message period in on-demand measurements. Notes: The value 10ms is only used in synthetic loss measurements. The value 0 means that the value is not relevant.

Contains Enumeration Literals:

- 10MS:
- 100MS:
- 1S:
- 10S:
- 0:

5.5.18 OamPduGenerationType

This enumeration defines the generation pattern of the on-demand OAM PDUs (messages).

Contains Enumeration Literals:

- SINGLE_INSTANCE:
- REPETITIVE_INSTANCE:
- SINGLE_SERIES:
- REPETITIVE_SERIES:

5.5.19 OamPeriod

Provides the frequency for the OAM PDU insertion.

Contains Enumeration Literals:

- 3,33MS:
 - Default for protection.
- 10MS:
- 100MS:
- 1S:
- 10S:
- 1MIN:
- 10MIN:

5.5.20 PcpCoding

This enum models the coding of the Priority Code Point as defined in section "Priority Code Point encoding" of IEEE 802.1Q.

Contains Enumeration Literals:

- 8P0D:
- 7P1D:
- 6P2D:
- 5P3D:
- DEI:
 - This enumeration value means that all priorities should be drop eligible. DEI = Drop Eligibility Indicator

5.5.21 RepetitionPeriod

This enumeration defines the allowed values for the repetition period in on-demand measurements. Note: The value 0 means that the value is not relevant.

Contains Enumeration Literals:

- 1MIN:
- 1S:
- 10S:
- 0:

5.5.22 TestPattern

The following values of pattern types are defined: "Null signal without CRC-32" "Null signal with CRC-32" "PRBS 2³¹-1 without CRC-32" "PRBS 2³¹-1 with CRC-32".

Contains Enumeration Literals:

- NULL-SIGNAL-WITHOUT-CRC-32:
- NULL-SIGNAL-WITH-CRC-32:
- PRBS-2³¹-1-WITHOUT-CRC-32:
- PRBS-2³¹-1-WITH-CRC-32:

5.5.23 VlanType

This enumeration contains the Ethertypes defined in IEEE 802.1Q.

Contains Enumeration Literals:

- C_Tag:
 - 0x8100
- S_Tag:
 - 0x88a8
- I_Tag:
 - 88-e7

5.6 Primitives

5.6.1 MacAddress

This primitive data type contains an Ethernet MAC address defined by IEEE 802a. The format of the address consists of 12 hexadecimal characters, grouped in pairs and separated by "-" (e.g., 03-27-AC-75-3E-1D).

5.6.2 Vid

This primitive type models the 12 Bit VLAN identifier of a VLAN tag.

6 Fault Management Model

TapiFm: This module contains TAPI Fault Management Model definitions. Source: TapiFm.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

6.1 Diagrams

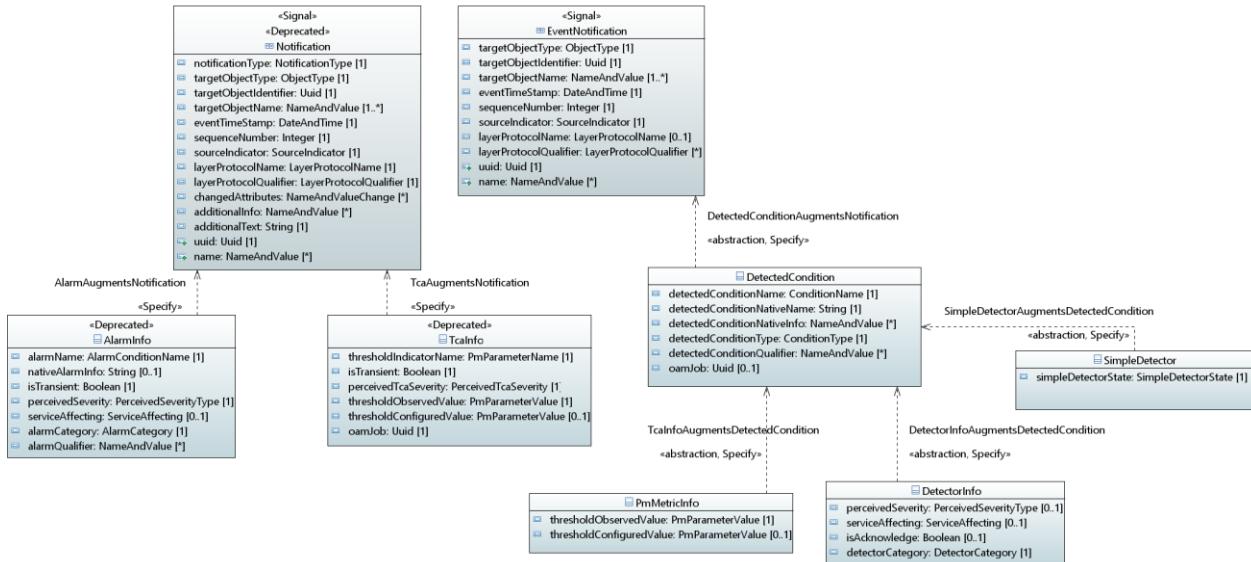
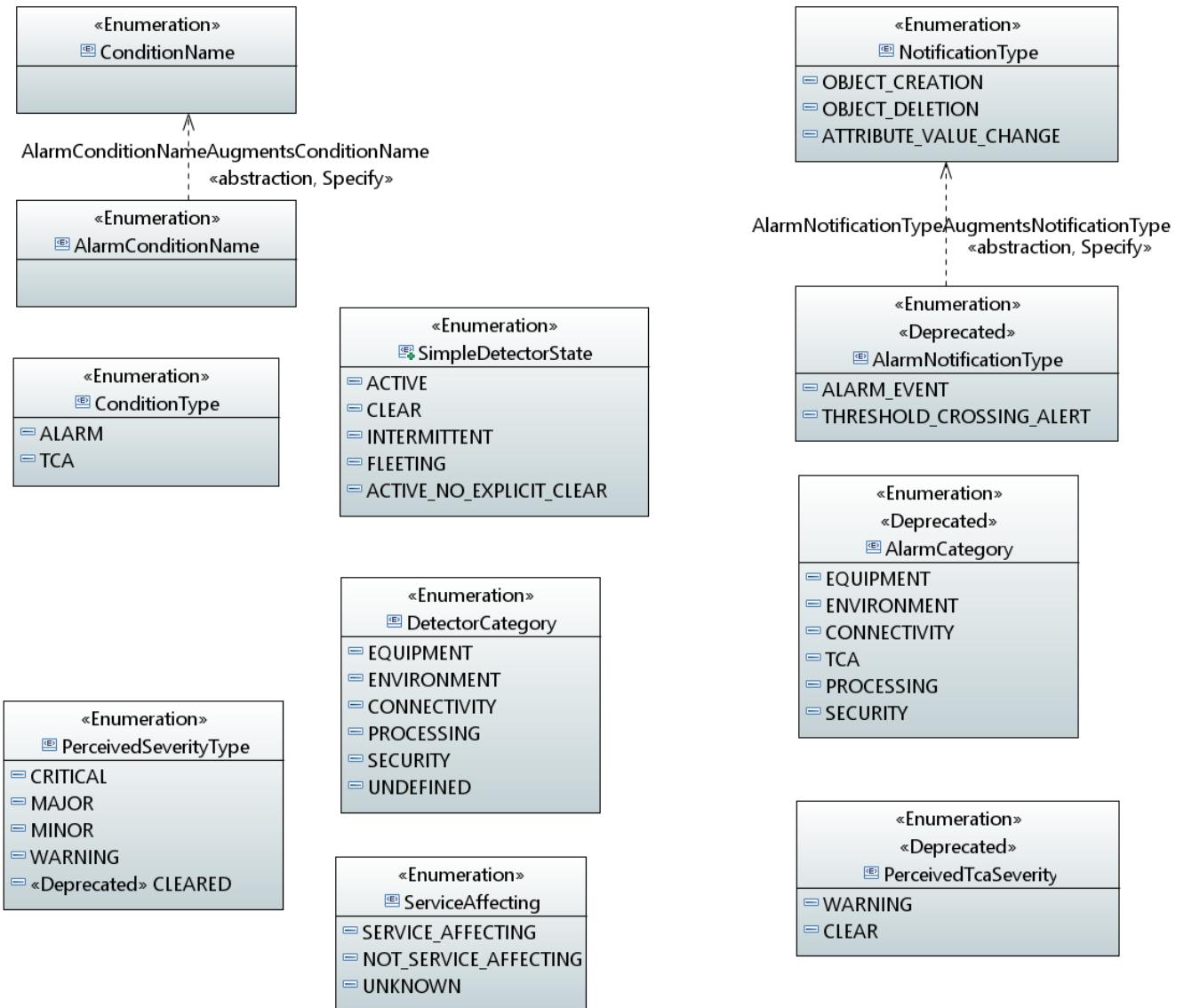


Figure 22 – FmDetails

**Figure 23 – FmTypes**

6.2 Classes

6.2.1 AlarmInfo

This class augments the `Notification` class with alarm related parameters.

Applied stereotypes:

- `OpenInterfaceModelClass`
 - `objectCreationNotification`: NA
 - `objectDeletionNotification`: NA
- `Deprecated`
- `OpenModelClass`
 - `support`: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
alarmName	AlarmConditionName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The probable cause of the failure (detected fault). G.806: - fault: A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources or planned actions. - fault cause: A single disturbance or fault may lead to the detection of multiple defects. - defect: The density of anomalies has reached a level where the ability to perform a required function has been interrupted. Defects are used as input for performance monitoring, the control of consequent actions and for the determination of fault causes. A fault cause is the result of a correlation process which is intended to identify the defect that is representative of the disturbance or fault that is causing the problem. - failure: The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected. - alarm: A human-observable indication that draws attention to a failure (detected fault) usually giving an indication of the severity of the fault.			
nativeAlarmInfo	String	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The probable cause of the failure as shown by lower level controllers.			
isTransient	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	An alarm is transient when stateless, i.e. an explicit clear notification is not foreseen.			
perceivedSeverity	PerceivedSeverityType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The alarm severity.			
serviceAffecting	ServiceAffecting	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The impact on the service.			
alarmCategory	AlarmCategory	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The alarm category, based on ITU-T X.733.			

Attribute Name	Type	Mult.	Access	Stereotypes
alarmQualifier	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

6.2.2 DetectedCondition

A record of the state of a Detector where that Detector has two underling states that are of asymmetric importance. For example, an alarm or a threshold crossing alert detected on a given resource. A Condition Detector represents any monitoring component that assesses properties of something and determines from those properties what conditions are associated with the thing. For example, a thing might be "too hot" or might be "unreliable".

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
detectedConditionName	ConditionName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	The name of the Condition, e.g. an alarm probable cause or the PM metric name which threshold crossing alert refers to. ITU-T probable cause of the failure (detected fault). G.806: - fault: A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources or planned actions. - fault cause: A single disturbance or fault may lead to the detection of multiple defects. - defect: The density of anomalies has reached a level where the ability to perform a required function has been interrupted. Defects are used as input for performance monitoring, the control of consequent actions and for the determination of fault causes. A fault cause is the result of a correlation process which is intended to identify the defect that is representative of the disturbance or fault that is causing the problem. - failure: The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected. - alarm: A human-observable indication that draws attention to a failure (detected fault) usually giving an indication of the severity of the fault.			
detectedConditionNativeName	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	The name used for the Condition by the source of the information.			

Attribute Name	Type	Mult.	Access	Stereotypes
detectedConditionNativeInfo	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Additional info of the Condition provided by the source of the information.				
detectedConditionType	ConditionType	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The type of the Condition.				
detectedConditionQualifier	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Further information necessary to precisely/uniquely/unambiguously identify the Condition Regarding ITU-T X.733 Alarm Category: For Equipment and Processing Alarm Category, e.g. the local id of the ActualNonFieldReplaceableModule which identifies exact alarm source. For Environment Alarm Category, e.g. on the same Device instance may appear more Environmental alarm notifications with same Alarm Name. For Connectivity Alarm Category in case that same CEP instance includes e.g. both OTS and OMS monitoring layers.				
oamJob	Uuid	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Reference to the OamJob instance for which the Condition detection has been configured, e.g. configuration of PM metrics and threshold values and/or of the (alarm) Conditions. The reference is defined as simple UUID because TapiFm does not import TapiOam. MEF 35.1: Identification of the PM Session for which the TCA Function was configured.				

6.2.3 DetectorInfo

(Legacy) information associated to a Condition (alarm).

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
perceivedSeverity	PerceivedSeverityType	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The severity of the detected Condition.				
serviceAffecting	ServiceAffecting	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The impact on the service.				
isAcknowledge	Boolean	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Information on operator acknowledgement.				
detectorCategory	DetectorCategory	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Detector (alarm) category, based on ITU-T X.733.				

6.2.4 PmMetricInfo

Information associated to a Threshold Crossing Alert.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
thresholdObservedValue	PmParameterValue	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The observed value of PM metric to which TCA refers to.				

Attribute Name	Type	Mult.	Access	Stereotypes
thresholdConfiguredValue	PmParameterValue	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

6.2.5 SimpleDetector

Information regarding the (simple) state of the Detector.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
simpleDetectorState	SimpleDetectorState	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

6.2.6 TcaInfo

This class augments the Notification class with threshold crossing alert related parameters.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- Deprecated
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
thresholdIndicatorName	PmParameterName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
isTransient	Boolean	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
A threshold crossing alert is transient when stateless, i.e. an explicit clear notification is not foreseen.				
perceivedTcaSeverity	PerceivedTcaSeverity	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The threshold crossing alert severity.				
thresholdObservedValue	PmParameterValue	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The observed value of PM metric to which TCA refers to.				
thresholdConfiguredValue	PmParameterValue	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The configured threshold value of PM metric to which TCA refers to.				
oamJob	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Reference to the OamJob instance for which the PM metric and threshold values were configured. The reference is defined as simple UUID because TapiFm does not import TapiOam. MEF 35.1: Identification of the PM Session for which the TCA Function was configured.				

6.3 Associations

6.4 Data Types

6.5 Enumerations

6.5.1 AlarmCategory

Contains Enumeration Literals:

- EQUIPMENT:
- ENVIRONMENT:

- CONNECTIVITY:
- TCA:
- PROCESSING:
- SECURITY:

6.5.2 AlarmConditionName

The alarm condition name, or alarm probable cause. This extensible enumeration can be augmented with specific alarm condition names in the other modules.

Contains Enumeration Literals:

6.5.3 AlarmNotificationType

The list of alarm specific notification types.

Contains Enumeration Literals:

- ALARM_EVENT:
 - The notification of an alarm event.
- THRESHOLD_CROSSING_ALERT:
 - The notification of a threshold crossing alert event.

6.5.4 ConditionType

The types of the Condition.

Contains Enumeration Literals:

- ALARM:
- TCA:
 - Threshold Crossing Alert

6.5.5 DetectorCategory

The Detector (alarm) category, based on ITU-T X.733.

Contains Enumeration Literals:

- EQUIPMENT:
- ENVIRONMENT:
- CONNECTIVITY:
- PROCESSING:
- SECURITY:
- UNDEFINED:

6.5.6 PerceivedSeverityType

The types of perceived severity. ITU-T G.7710: Failures may have been categorized to indicate the severity or urgency of the fault.

Contains Enumeration Literals:

- CRITICAL:
 - ITU-T G.7710/X.733/M.3100: Indication for a service-affecting condition. Immediate corrective action is required.
- MAJOR:

- ITU-T G.7710/X.733/M.3100: Indication for a service-affecting condition. Urgent corrective action is required.
- MINOR:
 - ITU-T G.7710/X.733/M.3100: Indication for a non-service-affecting condition. Corrective action should be taken in order to prevent more serious fault.
- WARNING:
 - ITU-T G.7710/X.733/M.3100: Indication for a potential or impending service-affecting fault. Further diagnosis should be made.
- CLEARED:
 - Included only for some possible backward compatibility purpose. It should not be used to assign a severity to a failure. ITU-T G.7710: The severities "cleared" and "indeterminate" defined by [ITU-T X.733] are not included in Table 2, as it is assumed that these are not to be used to assign a failure.

6.5.7 PerceivedTeaSeverity

The types of perceived severity of threshold crossing alerts.

Contains Enumeration Literals:

- WARNING:
 - ITU-T G.7710/X.733/M.3100: Indication for a potential or impending service-affecting fault. Further diagnosis should be made.
- CLEAR:
 - Included only for some possible backward compatibility purpose. It should not be used to assign a severity to a failure. ITU-T G.7710: The severities "cleared" and "indeterminate" defined by [ITU-T X.733] are not included in Table 2, as it is assumed that these are not to be used to assign a failure.

6.5.8 ServiceAffecting

The possible impact on the service.

Contains Enumeration Literals:

- SERVICE_AFFECTING:
 - The service is affected by the detected Condition.
- NOT_SERVICE_AFFECTING:
 - The service is not affected by the detected Condition.
- UNKNOWN:
 - The impact on the service is unknown.

6.5.9 SimpleDetectorState

The states of the detector.

Contains Enumeration Literals:

- ACTIVE:
 - The detector is indicating the operation of the monitored entity is not within acceptable bounds with respect to the specific condition measured. If INTERMITTENT is supported there may be a requirement for persisted unacceptable operation after a problem occurs before ACTIVE is declared. An alternative may be to declare INTERMITTENT. Where INTERMITTENT is supported, ACTIVE indicates the stable presence of a problem.
- CLEAR:

- The detector is indicating the operation of the monitored entity is within acceptable bounds with respect to the specific condition measured.
- INTERMITTENT:
 - The detector is indicating the operation of the monitored entity is intermittently not within acceptable bounds with respect to the specific condition measured. INTERMITTENT support is optional. Where it is supported there may be a requirement for persisted unacceptable operation after a problem occurs before ACTIVE or INTERMITTENT is declared.
- FLEETING:
 - Event has a very short life (Active-Clear), hence is notified/streamed after its occurrence.
- ACTIVE_NO_EXPLICIT_CLEAR:
 - Same as Active, but an explicit transition to Clear is not foreseen. This e.g. applies to PM metrics which can only increase (counters), hence the "clear" criteria is conventionally the end of a measurement period.

6.6 Primitives

7 Notification Model

TapiNotification: This module contains TAPI Notification Model definitions. Source: TapiNotification.uml
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7.1 Diagrams

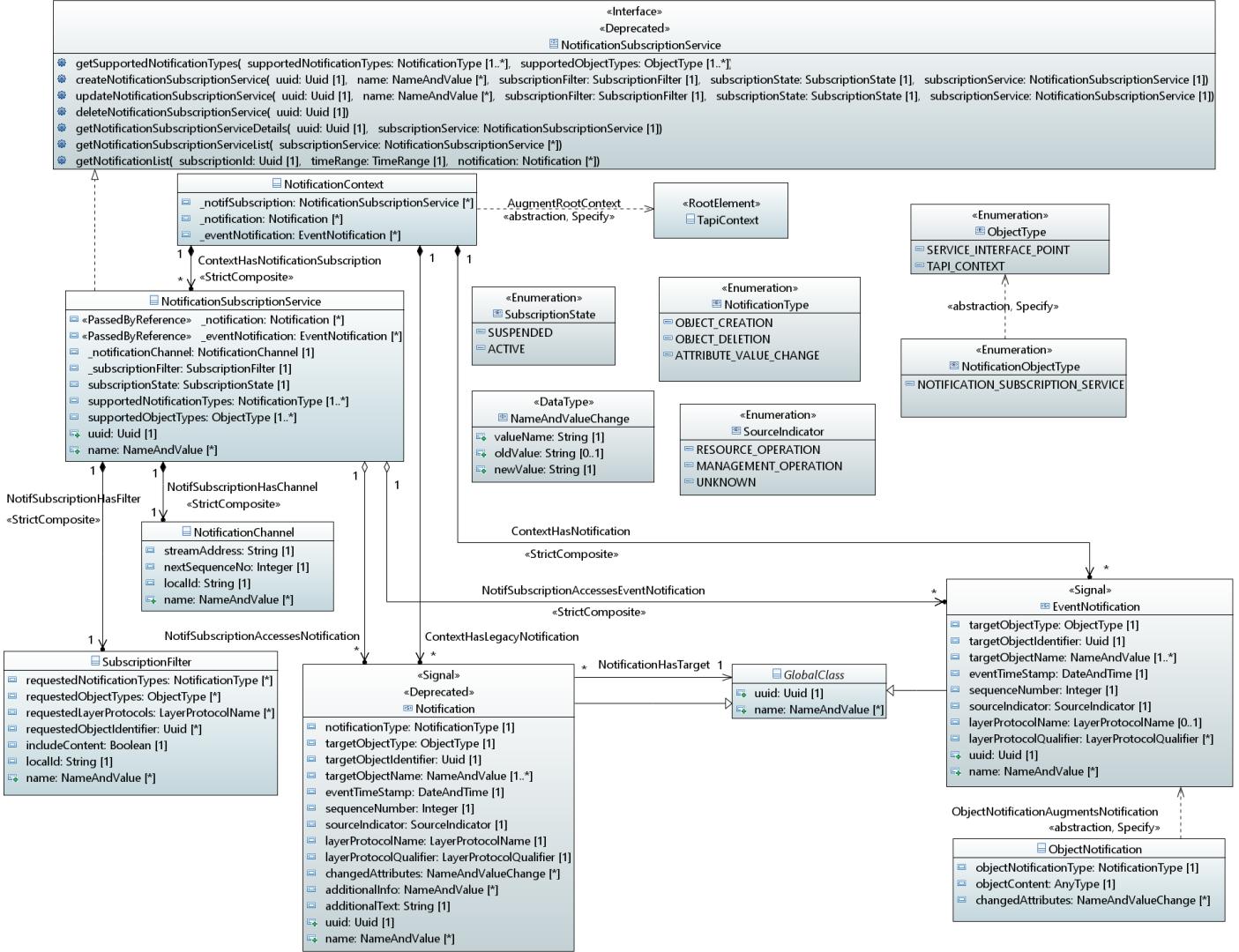


Figure 24 – *NotificationServiceDetails*

7.2 Classes

7.2.1 NotificationChannel

The channel/stream to which the subscribed notifications are published.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
streamAddress	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The address/location/URI of the channel/stream to which the subscribed notifications are published. The format is typically dependent on the implementation protocol & mechanism and hence is typed as a string.				
nextSequenceNo	Integer	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The sequence number of the next notification that will be published on the channel.				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

7.2.2 NotificationContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, specifically regarding the notification description. An instance of this class includes its NotificationSubscriptionService and Notification instances.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_notifSubscription	NotificationSubscriptionService	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The included NotificationSubscriptionService instances.				
_notification	Notification	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The included Notification instances.				
_eventNotification	EventNotification	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The included Event Notification instances.				

7.2.3 NotificationSubscriptionService

A NotificationSubscriptionService represents an "intent-like" request for the notification subscription. The NotificationSubscriptionService is a container for subscription request details.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_notification	Notification	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY PassedByReference
Description:				
The Notification instances associated to this NotificationSubscriptionService instance.				
_eventNotification	EventNotification	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY PassedByReference
Description:				
The EventNotification instances associated to this NotificationSubscriptionService instance.				

Attribute Name	Type	Mult.	Access	Stereotypes
_notificationChannel	NotificationChannel	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The NotificationChannel instance of this NotificationSubscriptionService instance.				
_subscriptionFilter	SubscriptionFilter	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The SubscriptionFilter instance of this NotificationSubscriptionService instance.				
subscriptionState	SubscriptionState	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The SubscriptionState value.				
supportedNotificationTypes	NotificationType	1..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The supported NotificationType value(s) of this NotificationSubscriptionService instance.				
supportedObjectTypes	ObjectType	1..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
The supported ObjectType value(s) of this NotificationSubscriptionService instance.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: yes – part: 1 isInvariant: true valueRange: no range constraint support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.</p>				

7.2.4 ObjectNotification

Object notification related information.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
objectNotificationType	NotificationType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
<p>Description:</p> <p>The object notification type.</p>				
objectContent	AnyType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
<p>Description:</p> <p>The object content, e.g. all the attributes of a newly created object. The mapping is not specified.</p>				
changedAttributes	NameAndValueChange	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
<p>Description:</p> <p>The list of relevant changed attributes and their values.</p>				

7.2.5 SubscriptionFilter

A SubscriptionFilter represents an "intent-like" request for the filters of the related notification subscription. The SubscriptionFilter is a container for filter request details.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
requestedNotificationTypes	NotificationType	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The requested NotificationType value(s).				
requestedObjectTypes	ObjectType	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The requested ObjectType value(s).				
requestedLayerProtocols	LayerProtocolName	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The requested layer protocol value(s).				
requestedObjectIdentifier	Uuid	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The requested object identifier (UUID) value(s).				
includeContent	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Indicates whether the published Notification includes content or just the Notification Id (which enables retrieval of the notification at the later stage).				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

7.3 Signals

7.3.1 EventNotification

The Notification signal. OMG UML(R) Version 2.5.1: "A Signal is a specification of a kind of communication between objects in which a reaction is asynchronously triggered in the receiver without a reply. The data carried by the communication are represented as attributes of the Signal."

Applied stereotypes:

- OpenModelNotification
 - triggerConditionList: invalid
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
targetObjectType	ObjectType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this ObjectType value.				
targetObjectIdentifier	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this UUID value.				
targetObjectName	NameAndValue	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this list of names.				
eventTimeStamp	DateAndTime	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The best knowledge of the time of the event which originated this Notification instance.				
sequenceNumber	Integer	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
A monotonous increasing sequence number associated with the Notification instances. The exact semantics of how this sequence number is assigned (per channel or subscription or source or system) is left undefined.				

Attribute Name	Type	Mult.	Access	Stereotypes
sourceIndicator	SourceIndicator	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The possible source of this Notification instance.				
layerProtocolName	LayerProtocolName	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to a resource with this layer protocol value.				
layerProtocolQualifier	LayerProtocolQualifier	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to a resource with this layer protocol qualifier value.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

7.3.2 Notification

The Notification signal. OMG UML(R) Version 2.5.1: "A Signal is a specification of a kind of communication between objects in which a reaction is asynchronously triggered in the receiver without a reply. The data carried by the communication are represented as attributes of the Signal."

Applied stereotypes:

- Deprecated
- OpenModelNotification
 - triggerConditionList: invalid
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
notificationType	NotificationType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification type.				
targetObjectType	ObjectType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this ObjectType value.				
targetObjectIdentifier	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this UUID value.				
targetObjectName	NameAndValue	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to the object instance with this list of names.				
eventTimeStamp	DateAndTime	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The best knowledge of the time of the event which originated this Notification instance.				
sequenceNumber	Integer	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
A monotonous increasing sequence number associated with the Notification instances. The exact semantics of how this sequence number is assigned (per channel or subscription or source or system) is left undefined.				
sourceIndicator	SourceIndicator	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The possible source of this Notification instance.				

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to a resource with this layer protocol value.				
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The Notification instance is related to a resource with this layer protocol qualifier value.				
changedAttributes	NameAndValueChange	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The list of relevant changed attributes and their values.				
additionalInfo	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Name and value list available for unspecified content.				
additionalText	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Text available for unspecified content.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

7.4 Associations

7.4.1 ContextHasLegacyNotification

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_notification	composite	Yes	Notification	0..*
notificationcontext	none	No	NotificationContext	1

7.4.2 ContextHasNotification

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_eventNotification	composite	Yes	EventNotification	0..*
notificationcontext	none	No	NotificationContext	1

7.4.3 ContextHasNotificationSubscription

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_notifSubscription	composite	Yes	NotificationSubscriptionService	0..*
notificationcontext	none	No	NotificationContext	1

7.4.4 NotifSubscriptionAccessesEventNotification

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_eventNotification	shared	Yes	EventNotification	0..*
notificationsubscriptionservice	none	No	NotificationSubscriptionService	1

7.4.5 NotifSubscriptionAccessesNotification

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_notification	shared	Yes	Notification	0..*
_notifSubscription	none	No	NotificationSubscriptionService	1

7.4.6 NotifSubscriptionHasChannel

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_notificationChannel	composite	Yes	NotificationChannel	1
_notifSubscription	none	No	NotificationSubscriptionService	1

7.4.7 NotifSubscriptionHasFilter

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_subscriptionFilter	composite	Yes	SubscriptionFilter	1
_notifSubscription	none	No	NotificationSubscriptionService	1

7.4.8 NotificationHasTarget

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_targetObject	none	Yes	GlobalClass	1
_notification	none	No	Notification	0..*

7.5 Data Types

7.5.1 NameAndValueChange

A scoped name-value triple, including old value and new value.

Attribute Name	Type	Mult.	Access	Stereotypes
valueName	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The name of the value. The value need not have a name.			
oldValue	String	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The old value.			
newValue	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The new value.			

7.6 Enumerations

7.6.1 NotificationObjectType

The list of TAPI Notification Global Object Class types on which Notification signals can be raised.

Contains Enumeration Literals:

- NOTIFICATION_SUBSCRIPTION_SERVICE:
 - The NotificationSubscriptionService class.

7.6.2 NotificationType

List of supported notification types.

Contains Enumeration Literals:

- OBJECT_CREATION:
 - The notification of an object instance creation event.
- OBJECT_DELETION:
 - The notification of an object instance deletion event.
- ATTRIBUTE_VALUE_CHANGE:
 - The notification of an attribute value change event.

7.6.3 SourceIndicator

The possible source of the notification.

Contains Enumeration Literals:

- RESOURCE_OPERATION:
 - The notification has been raised as a consequence of a generic state change of resource(s) in the managed network.
- MANAGEMENT_OPERATION:
 - The notification has been raised as a consequence of a management operation.
- UNKNOWN:
 - Unknown source of the notification.

7.6.4 SubscriptionState

The SubscriptionState types.

Contains Enumeration Literals:

- SUSPENDED:
 - The subscription is suspended.
- ACTIVE:
 - The subscription is active.

7.7 Primitives

8 OAM Model

TapiOam: This module contains TAPI OAM Model definitions. Source: TapiOam.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

8.1 Diagrams

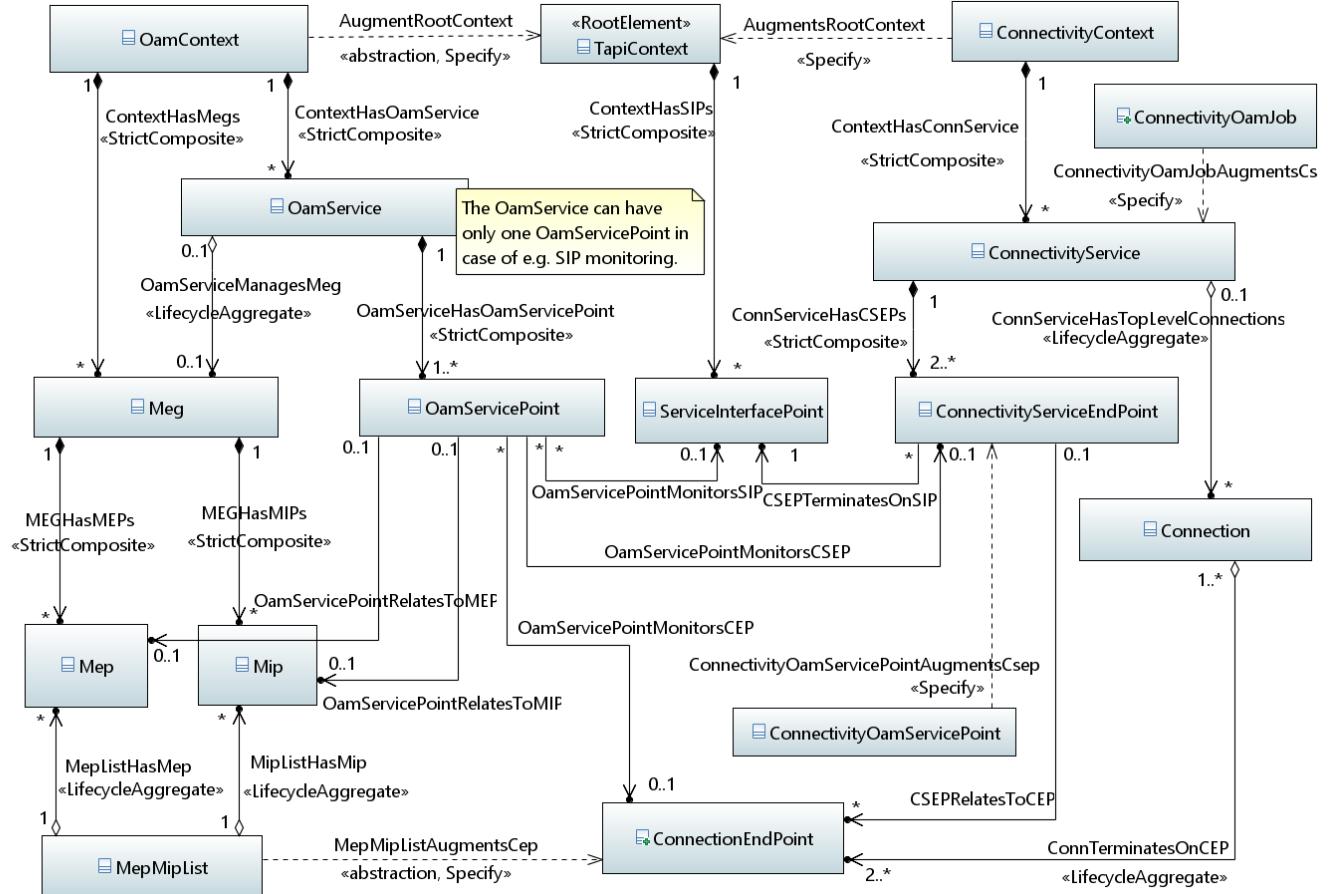


Figure 25 – OamConnSkeleton

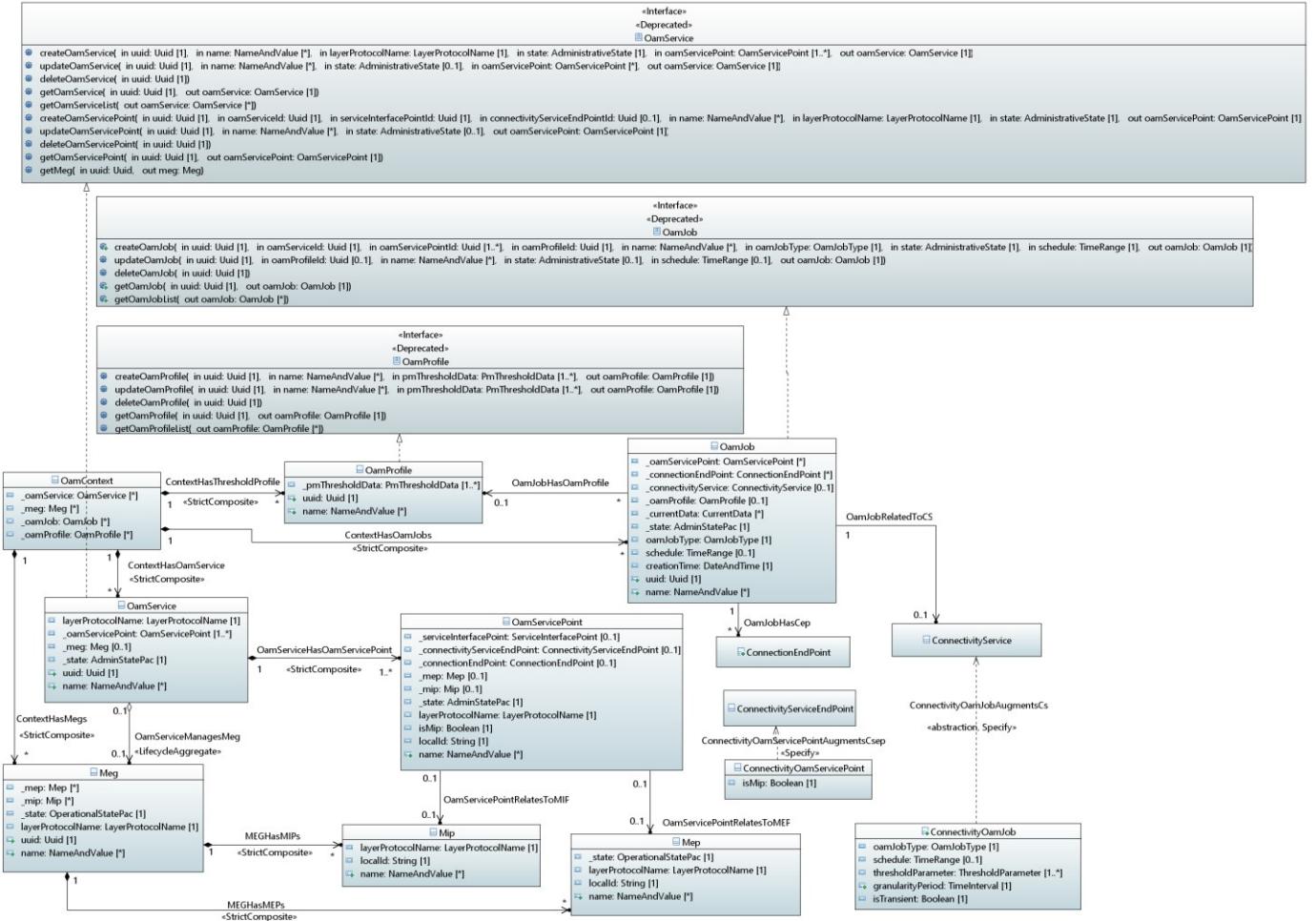
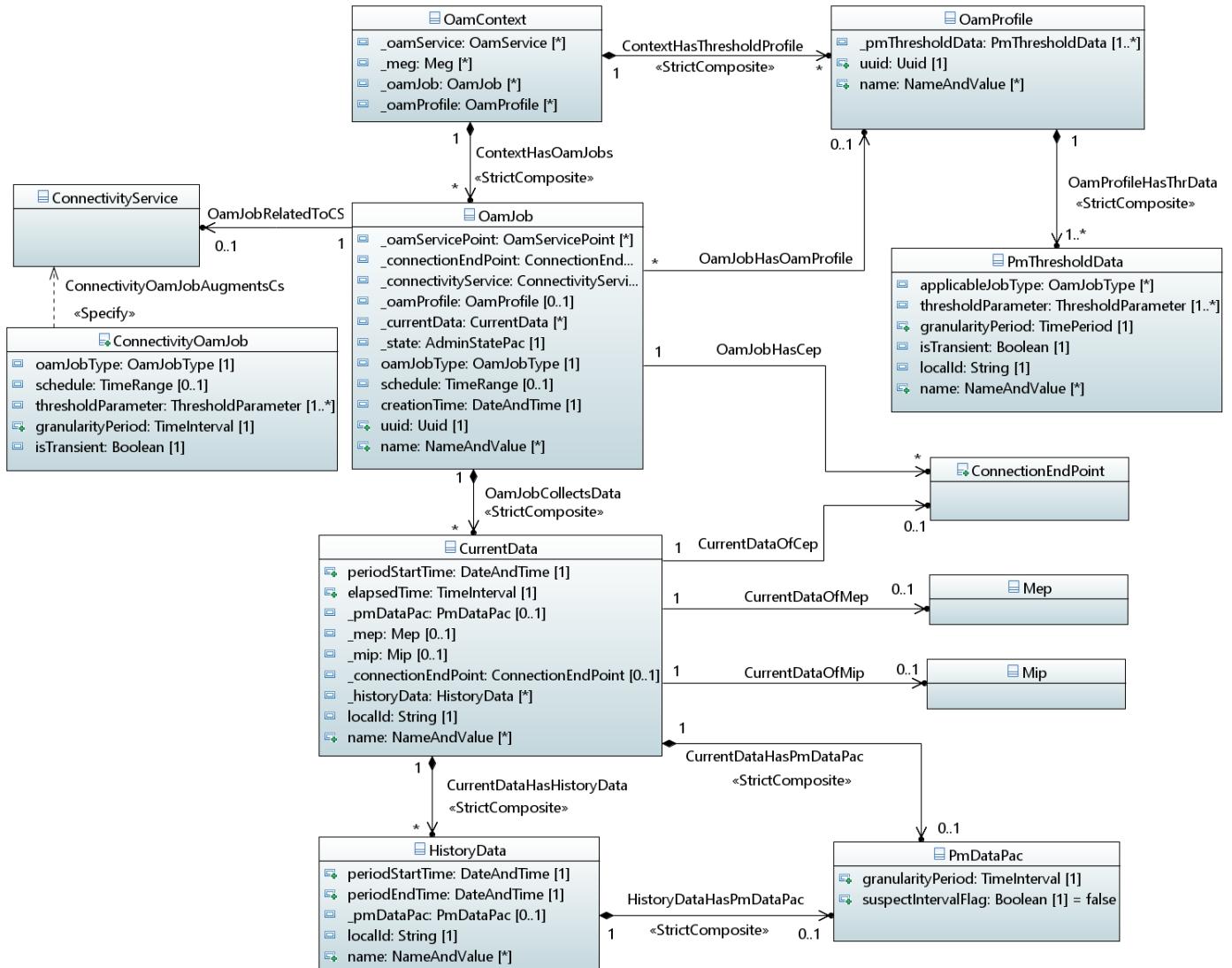


Figure 26 – OamDetails

Figure 27 – *OamJobDetails*

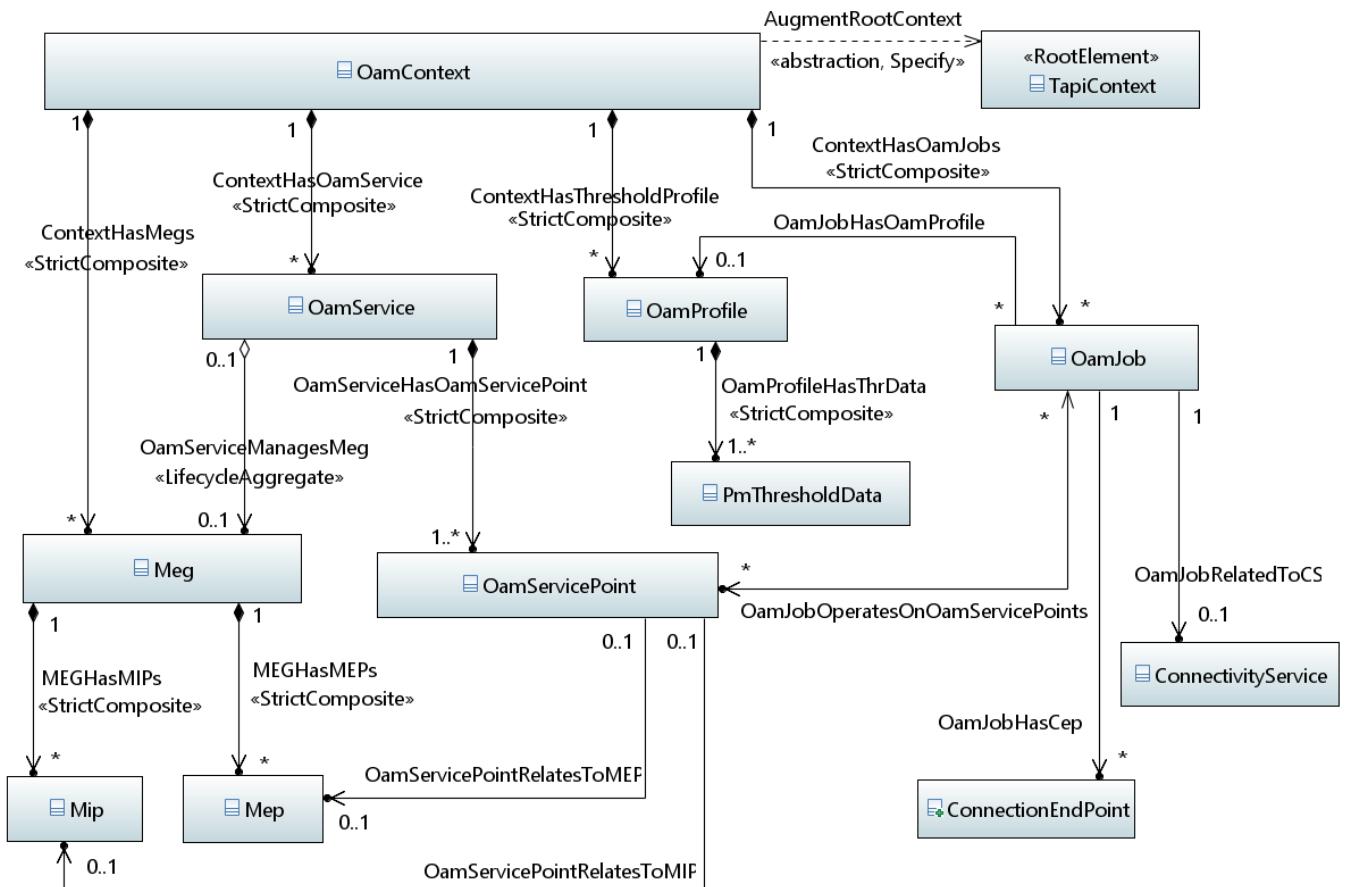


Figure 28 – OamSkeleton

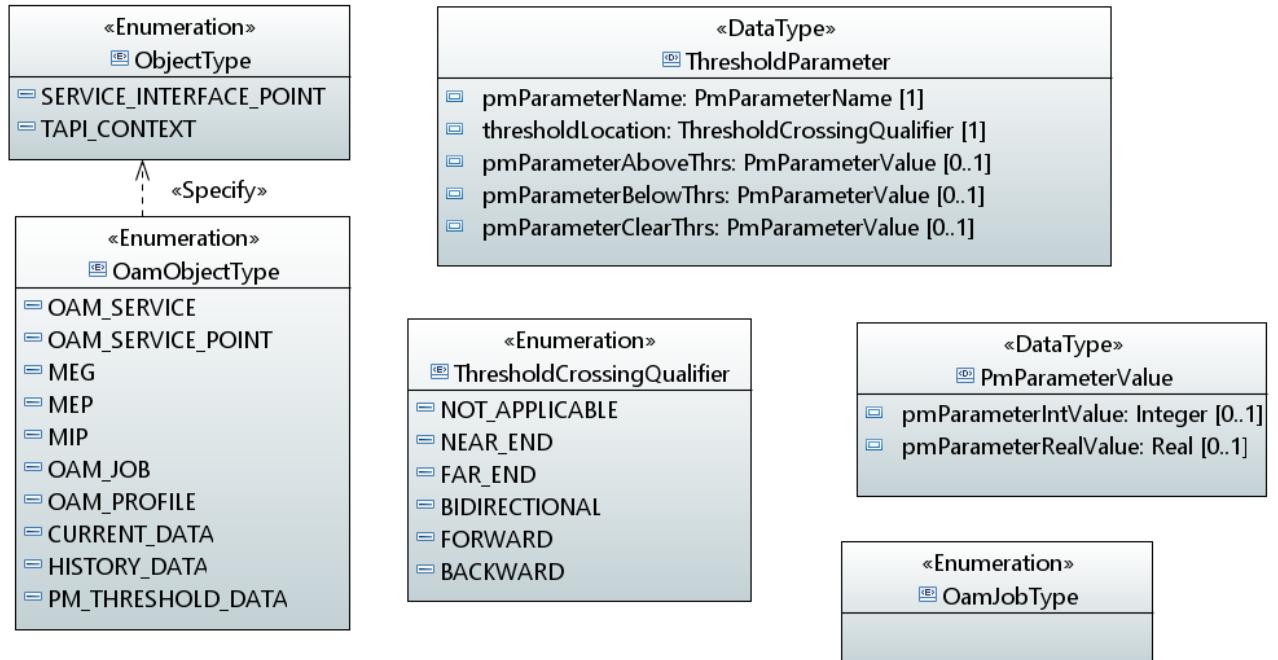


Figure 29 – OamTypes

8.2 Classes

8.2.1 ConnectivityOamJob

This class augments the ConnectivityService class to associate OAM job provisioning to ConnectivityService provisioning.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
oamJobType	OamJobType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The type of the OAM job.				
schedule	TimeRange	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The schedule of the OAM job.				
thresholdParameter	ThresholdParameter	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The PM metrics and their threshold values.				
granularityPeriod	TimeInterval	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The granularity period or measurement interval time of the OAM job.				
isTransient	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
A threshold crossing alert is transient when stateless, i.e. an explicit clear notification is not foreseen.				

8.2.2 ConnectivityOamServicePoint

This class augments the ConnectivityServiceEndPoint (CSEP) class to associate OAM service provisioning to ConnectivityService provisioning.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
isMip	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Description:
If true, the object is related to a MIP. If false, the object is related to a MEP.

8.2.3 CurrentData

The CurrentData class. The PM metrics/types can be specified in technology specific augmentations of this class. ITU-T Q.822: This object contains the measurements for the resource being monitored for a specified time interval (measurement interval time / granularity period).

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
periodStartTime	DateAndTime	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
elapsedTime	TimeInterval	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Description:
This attribute indicates the start time of the current monitoring interval / granularity period. The value is bound to the quarter of an hour in case of a 15 minute interval and bound to the hour in case of a 24 hour interval.

Description:
Q822: This attribute represents the difference between the current time and the start of the present interval.

Attribute Name	Type	Mult.	Access	Stereotypes
_pmDataPac	PmDataPac	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Parameters specific to Performance Monitoring functions.				
_mep	Mep	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The MEP to which the measurements refer to.				
_mip	Mip	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The MIP to which the measurements refer to.				
_connectionEndPoint	ConnectionEndPoint	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The CEP to which the measurements refer to.				
_historyData	HistoryData	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The associated HistoryData instances. In case of 24hr CurrentData, at least 1 HistoryData instance shall be maintained. In case of 15min CurrentData, at least 16 HistoryData instances shall be maintained. In case of <15min, the number of HistoryData instances shall be able to cover a span of 4 hours.				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

8.2.4 HistoryData

The HistoryData class. The PM metrics/types can be specified in technology specific augmentations of this class. ITU-T Q.822: This object will contain a copy of the performance management and other selected attributes that are present in the CurrentData object at the end of the current interval (measurement interval time / granularity period). A new instance of this object class is created at the end of each interval.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
periodStartTime	DateAndTime	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute indicates the start time of the monitoring interval / granularity period. The value is bound to the quarter of an hour in case of a 15 minute interval and bound to the hour in case of a 24 hour interval.				
periodEndTime	DateAndTime	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
This attribute indicates the end time of the monitoring interval / granularity period. The value is bound to the quarter of an hour in case of a 15 minute interval and bound to the hour in case of a 24 hour interval.				
_pmDataPac	PmDataPac	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Parameters specific to Performance Monitoring functions.				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.</p>				

8.2.5 Meg

The Maintenance Entity Group. ITU-T G.8001: A group defined, for the purpose of fragment or connection monitoring, between a set of flow or connection points within a fragment/connection. This set of flow or connection points may be located at the boundary of one administrative domain or a protection domain, or at the boundaries of two adjacent administrative domains. The maintenance entity group consists of one or more maintenance entities (the entity between two of the flow/connection points in a maintenance entity group).

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mep	Mep	0..*	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>The maintenance entity group consists of one or more maintenance entities. There are the following cases: 1. A maintenance entity may have 0 MEPs (case of transit domains where at least 1 MIP is present). 2. A maintenance entity may have 1 MEP (case of edge domains, where the peer MEP is outside the managed domain). 3. A maintenance entity may have 2 MEPs.</p>			
_mip	Mip	0..*	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>The maintenance entity group may have 0, 1, or more MIPs.</p>			
_state	OperationalStatePac	1	RW	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>The Meg status information.</p>			
layerProtocolName	LayerProtocolName	1	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>The MEG layer protocol.</p>			

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
Description:				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.6 Mep

The Maintenance Entity group end Point. ITU-T G.8001: maintenance entity group end point compound sink function: A compound transport processing function that accepts the characteristic information of the layer network at its input, extracts and processes the OAM information related to the monitoring of the maintenance entity group, filters the OAM information from within to the maintenance entity group, adapts the information and presents it as the characteristic information of the layer or a client layer at its output, potentially as a (client) layer maintenance signal (e.g., AIS). ITU-T G.8001: maintenance entity group end point compound source function: A compound transport processing function that accepts the characteristic information of the layer or a client layer network at its input, adapts that information, filters it for OAM information interfering with its own OAM information, adds OAM information to allow the maintenance entity group to be monitored and presents the resulting information at its output.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_state	OperationalStatePac	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	The Mep status information.			
layerProtocolName	LayerProtocolName	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The Mep layer protocol.			
localId	String	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.7 MepMipList

This class provides the linkage between the ConnectionEndPoint (CEP) instance and its associated Mep and Mip instances. The CEP class, which is defined in TapiConnectivity module, cannot directly include the reference to its Mep/Mip, because Mep/Mip classes are defined in another module, TapiOam.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
_mep	Mep	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The list of associated Mep instances.			
_mip	Mip	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The list of associated Mip instances.			

8.2.8 Mip

The Maintenance entity group Intermediate Point. ITU-T G.8001: maintenance entity group intermediate point compound function: A compound transport processing function that accepts the characteristic information of the layer network at its input, reacts to OAM information related to on-demand monitoring of a maintenance entity group and presents the characteristic information without the OAM to which it reacted at its output.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolName	LayerProtocolName	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	The Mip layer protocol.			
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.9 OamContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, specifically regarding the OAM description. An instance of this class includes its OamService, OamProfile, OamJob and Meg object instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_oamService	OamService	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The included OamService instances.				
_oamProfile	OamProfile	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The included OamProfile instances.				
_oamJob	OamJob	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The included OamJob instances.				
_meg	Meg	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The included Meg instances.				

8.2.10 OamJob

This class allows the provisioning of performance monitoring functions on specified resources.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_oamServicePoint	OamServicePoint	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamServicePoint (OSP) instances involved in the OamJob.				

Attribute Name	Type	Mult.	Access	Stereotypes
_connectionEndPoint	ConnectionEndPoint	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
_connectivityService	ConnectivityService	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
In case the OamJob instance is not related to any OamService/Point but created together with ConnectivityService through ConnectivityOamJob augment.				
_oamProfile	OamProfile	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamProfile instance referred by the OamJob.				
_currentData	CurrentData	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The CurrentData instances in the scope of the OamJob.				
_state	AdminStatePac	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamJob status information.				
oamJobType	OamJobType	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamJob type.				
schedule	TimeRange	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamJob schedule.				

Attribute Name	Type	Mult.	Access	Stereotypes
creationTime	DateAndTime	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The OamJob creation time.			
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.11 OamProfile

The OamProfile allows centralization of OAM provisioning aspects, e.g. the PM parameters and their threshold values.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_pmThresholdData	PmThresholdData	1..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The PM threshold information associated to the OamProfile.			
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.12 OamService

An OamService represents an "intent-like" request for OAM functions between two or more OamServicePoint (OSP) instances. The OamService is a container for OAM request details and is distinct from the Meg that realize the request.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY 			
layerProtocolName	LayerProtocolName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The OamService layer protocol.			
_oamServicePoint	OamServicePoint	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The OamServicePoint (OSP) instances of the OamService.			
_meg	Meg	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The Meg instance tracking the state of the allocated resources for the support of the OamService.			

Attribute Name	Type	Mult.	Access	Stereotypes
_state	AdminStatePac	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The OamService status information.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

8.2.13 OamServicePoint

The OamServicePoint (OSP) is a container for OAM request details and is distinct from the Mep and/or Mip instances that realize the request.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_serviceInterfacePoint	ServiceInterfacePoint	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The supporting ServiceInterfacePoint (SIP) instance. If neither ConnectivityServiceEndPoint (CSEP) nor ConnectionEndPoint (CEP) are specified, the OamServicePoint (OSP) is intended for SIP monitoring.				
_connectivityServiceEndPoint	ConnectivityServiceEndPoint	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The ConnectivityServiceEndPoint (CSEP) instance monitored by the OamServicePoint (OSP). If not specified (and neither CEP is specified), the OamServicePoint (OSP) is intended for SIP monitoring.			
_connectionEndPoint	ConnectionEndPoint	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The ConnectionEndPoint (CEP) instance monitored by the OamServicePoint (OSP). If not specified (and neither CSEP is specified), the OamServicePoint (OSP) is intended for SIP monitoring.			
_mep	Mep	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The associated Mep instance, mutually exclusive wrt Mip instance.			
_mip	Mip	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The associated Mip instance, mutually exclusive wrt Mep instance.			
_state	AdminStatePac	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The OamServicePoint (OSP) status information.			
layerProtocolName	LayerProtocolName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The OamServicePoint (OSP) layer protocol.			
isMip	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: If true, the object is related to a MIP. If false, the object is related to a MEP.			
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

8.2.14 PmDataPac

Parameters specific to Performance Monitoring functions.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The granularity period or measurement interval time.			
granularityPeriod	TimeInterval	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The granularity period or measurement interval time.			
suspectIntervalFlag	Boolean	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: This attribute is used to indicate that the performance data for the current period may not be reliable. Some reasons for this to occur are: - Suspect data were detected by the actual resource doing data collection. - Transition of the administrativeState attribute to/from the 'lock' state. - Transition of the operationalState to/from the 'disabled' state. - Scheduler setting that inhibits the collection function. - The performance counters were reset during the interval. - The currentData (or subclass) object instance was created during the monitoring period.			

8.2.15 PmThresholdData

The PM threshold information associated to an OamProfile instance. It defines a set of PM metrics, their threshold values, the granularity period or measurement interval time for these PM metrics, the stateful or stateless types of related threshold crossing alert (TCA) reporting.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
applicableJobType	OamJobType	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA ◦ OpenModelAttribute ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY
	Description: This attribute allows an PmThresholdData instance to be constrained to specific job types. If a PmThresholdData instance is so configured to be applicable to more than one job type (worst case ALL), only the parameters relevant for the job instance will be used (non-applicable profile parameters will be ignored).			
thresholdParameter	ThresholdParameter	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA ◦ OpenModelAttribute ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY
	Description: The PM metrics and their threshold values.			
granularityPeriod	TimePeriod	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA ◦ OpenModelAttribute ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY
	Description: The granularity period or measurement interval time.			
isTransient	Boolean	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA ◦ OpenModelAttribute ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY
	Description: A threshold crossing alert (TCA) is transient when stateless, i.e. an explicit alarm clear notification is not foreseen. MEF 35.1: Thresholds and associated TCAs are specific to a particular performance metric in a given PM Session (or OAM job). There are two types of TCA reporting: stateless and stateful. With stateless reporting, a TCA is generated in each Measurement Interval in which the threshold is crossed. With stateful reporting, a SET TCA is generated in the first Measurement Interval in which the threshold is crossed, and a CLEAR TCA is subsequently generated at the end of the first Measurement Interval in which the threshold is not crossed. Note: In ITU-T G.7710 terminology, stateless TCA reporting corresponds to a transient condition, and stateful TCA reporting corresponds to a standing condition. Note that threshold management for gauges may be more complex (e.g. out of range function for gauge overflow/underflow detection).			
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA ◦ OpenModelAttribute ◦ isKey: yes – part: 1 ◦ isInvariant: true ◦ valueRange: no range constraint ◦ support: MANDATORY
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			

Attribute Name	Type	Mult.	Access	Stereotypes
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

8.3 Associations

8.3.1 ContextHasMegs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_meg	composite	Yes	Meg	0..*
_fc	none	No	OamContext	1

8.3.2 ContextHasOamJobs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamJob	composite	Yes	OamJob	0..*
oamcontext	none	No	OamContext	1

8.3.3 ContextHasOamService

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamService	composite	Yes	OamService	0..*
oamcontext	none	No	OamContext	1

8.3.4 ContextHasThresholdProfile

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamProfile	composite	Yes	OamProfile	0..*
oamcontext	none	No	OamContext	1

8.3.5 CurrentDataHasHistoryData

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_historyData	composite	Yes	HistoryData	0..*
_currentData	none	No	CurrentData	1

8.3.6 CurrentDataHasPmDataPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_pmDataPac	composite	Yes	PmDataPac	0..1
currentdata	none	No	CurrentData	1

8.3.7 CurrentDataOfCep

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
connectionEndPoint	none	Yes	ConnectionEndPoint	0..1
currentdata	none	No	CurrentData	1

8.3.8 CurrentDataOfMep

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mep	none	Yes	Mep	0..1
currentdata	none	No	CurrentData	1

8.3.9 CurrentDataOfMip

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mip	none	Yes	Mip	0..1
currentdata	none	No	CurrentData	1

8.3.10 HistoryDataHasPmDataPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_pmDataPac	composite	Yes	PmDataPac	0..1
historydata	none	No	HistoryData	1

8.3.11 JobHasAdminStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
measurementjob	none	No	OamJob	1

8.3.12 MEGHasMEPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mep	composite	Yes	Mep	0..*
_me	none	No	Meg	1

8.3.13 MEGHasMIPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mip	composite	Yes	Mip	0..*
_me	none	No	Meg	1

8.3.14 MEGHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	OperationalStatePac	1
_meg	none	No	Meg	1

8.3.15 MEPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	OperationalStatePac	1
_mep	none	No	Mep	1

8.3.16 MepListHasMep

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mep	shared	Yes	Mep	0..*
oamctppacspe	none	No	MepMipList	1

8.3.17 MipListHasMip

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mip	shared	Yes	Mip	0..*
oamctppacspe	none	No	MepMipList	1

8.3.18 OSEPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
oamserviceendpoint	none	No	OamServicePoint	1

8.3.19 OamJobCollectsData

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_currentData	composite	Yes	CurrentData	0..*
oamjob	none	No	OamJob	1

8.3.20 OamJobHasCep

Direct reference to CEP for simple OAM jobs like loopback.

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
connectionEndPoint	none	Yes	ConnectionEndPoint	0..*
oamjob	none	No	OamJob	1

8.3.21 OamJobHasOamProfile

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamProfile	none	Yes	OamProfile	0..1
oamjob	none	No	OamJob	0..*

8.3.22 OamJobOperatesOnOamServicePoints

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamServicePoint	none	Yes	OamServicePoint	0..*
oamJob	none	Yes	OamJob	0..*

8.3.23 OamJobRelatedToCS

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectivityService	none	Yes	ConnectivityService	0..1
oamjob	none	No	OamJob	1

8.3.24 OamProfileHasThrData

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_pmThresholdData	composite	Yes	PmThresholdData	1..*
pmthresholdprofile	none	No	OamProfile	1

8.3.25 OamServiceHasOamServicePoint

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oamServicePoint	composite	Yes	OamServicePoint	1..*
oamservice	none	No	OamService	1

8.3.26 OamServiceHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
oamservice	none	No	OamService	1

8.3.27 OamServiceManagesMeg

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_meg	shared	Yes	Meg	0..1
fc	none	No	OamService	0..1

8.3.28 OamServicePointMonitorsCEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectionEndPoint	none	Yes	ConnectionEndPoint	0..1
oamservicepoint	none	No	OamServicePoint	0..*

8.3.29 OamServicePointMonitorsCSEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_connectivityServiceEndPoint	none	Yes	ConnectivityServiceEndPoint	0..1
oamserviceendpoint	none	No	OamServicePoint	0..*

8.3.30 OamServicePointMonitorsSIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serviceInterfacePoint	none	Yes	ServiceInterfacePoint	0..1
oamserviceendpoint	none	No	OamServicePoint	0..*

8.3.31 OamServicePointRelatesToMEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mep	none	Yes	Mep	0..1
oamServiceEndPoint	none	No	OamServicePoint	0..1

8.3.32 OamServicePointRelatesToMIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mip	none	Yes	Mip	0..1
oamServiceEndPoint	none	No	OamServicePoint	0..1

8.4 Data Types

8.4.1 ThresholdParameter

PM metrics, their locations and threshold values.

Attribute Name	Type	Mult.	Access	Stereotypes
pmParameterName	PmParameterName	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute isKey: yes – part: 1 isInvariant: false valueRange: no range constraint support: MANDATORY
	Description: PM metric name.			
thresholdLocation	ThresholdCrossingQualifier	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute isKey: yes – part: 2 isInvariant: false valueRange: no range constraint support: MANDATORY
	Description: PM metric location.			
pmParameterAboveThrs	PmParameterValue	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
	Description: PM metric above threshold.			
pmParameterBelowThrs	PmParameterValue	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
	Description: PM metric below threshold.			
pmParameterClearThrs	PmParameterValue	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: PM metric clear threshold.			

8.5 Enumerations

8.5.1 OamJobType

The OAM job types. This extensible enumeration can be augmented with specific OAM job types in the other modules.

Contains Enumeration Literals:

8.5.2 OamObjectType

The list of TAPI OAM Global Object Class types on which Notification signals can be raised.

Contains Enumeration Literals:

- OAM_SERVICE:
 - The OamService class.
- OAM_SERVICE_POINT:
 - The OamServicePoint (OSP) class.
- MEG:
 - The Meg class.
- MEP:
 - The Mep class.
- MIP:
 - The Mip class.
- OAM_JOB:
 - The OamJob class.
- OAM_PROFILE:
 - The OamProfile class.
- CURRENT_DATA:
 - The CurrentData class.
- HISTORY_DATA:
 - The HistoryData class.
- PM_THRESHOLD_DATA:
 - The PmThresholdData class.

8.5.3 ThresholdCrossingQualifier

Threshold crossing location or qualifier.

Contains Enumeration Literals:

- NOT_APPLICABLE:
 - Location or qualifier not applicable.
- NEAR_END:
 - Near End detection.
- FAR_END:
 - Far end detection.
- BIDIRECTIONAL:
 - Composition of near and far end detections.

- FORWARD:
 - MEF 35.1: The direction of performance measurements from the Controller MEP towards the Responder or Sink MEP, when One-way measurements are taken using a Single-Ended or Dual-Ended PM Function. MEF 83: In Single-Ended measurements, it is assumed that the FORWARD and FAR-END qualifiers are equivalent. In Dual-Ended measurements (and in case of TX counters), it is assumed that the FORWARD and NEAR-END qualifiers are equivalent.
- BACKWARD:
 - MEF 35.1: The direction of performance measurements from the Responder MEP towards the Controller MEP, when One-way measurements are taken using a Single-Ended PM Function. Note: this term is not applicable when Dual-Ended PM Functions are used. MEF 83: In Single-Ended measurements, it is assumed that the BACKWARD and NEAR-END qualifiers are equivalent. In Dual-Ended measurements (and in case of TX counters), it is assumed that the BACKWARD and FAR-END qualifiers are equivalent.

8.6 Primitives

9 Digital OTN Model

TapiOdu: This module contains TAPI Digital OTN Model definitions. Source: TapiOdu.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

9.1 Diagrams

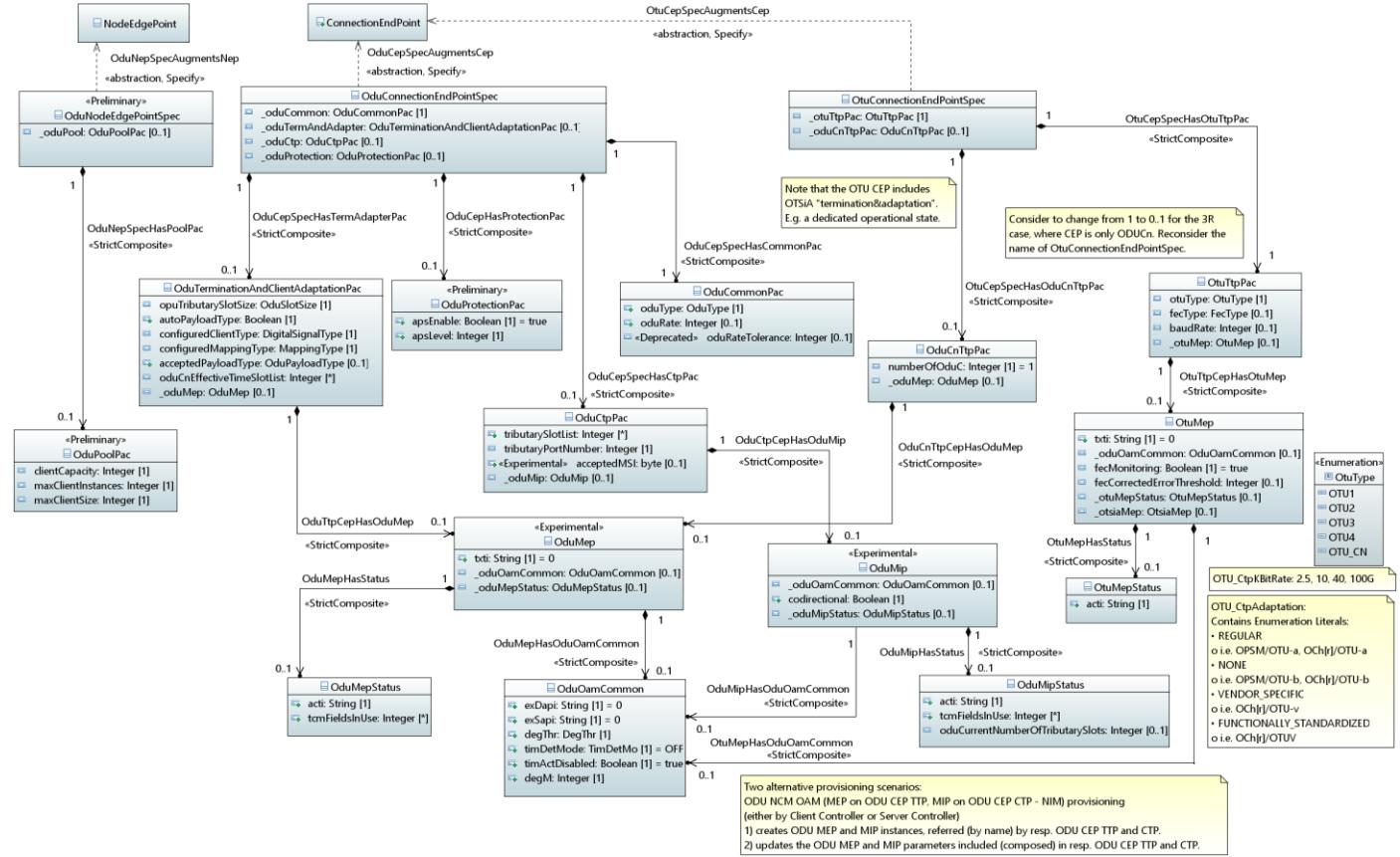
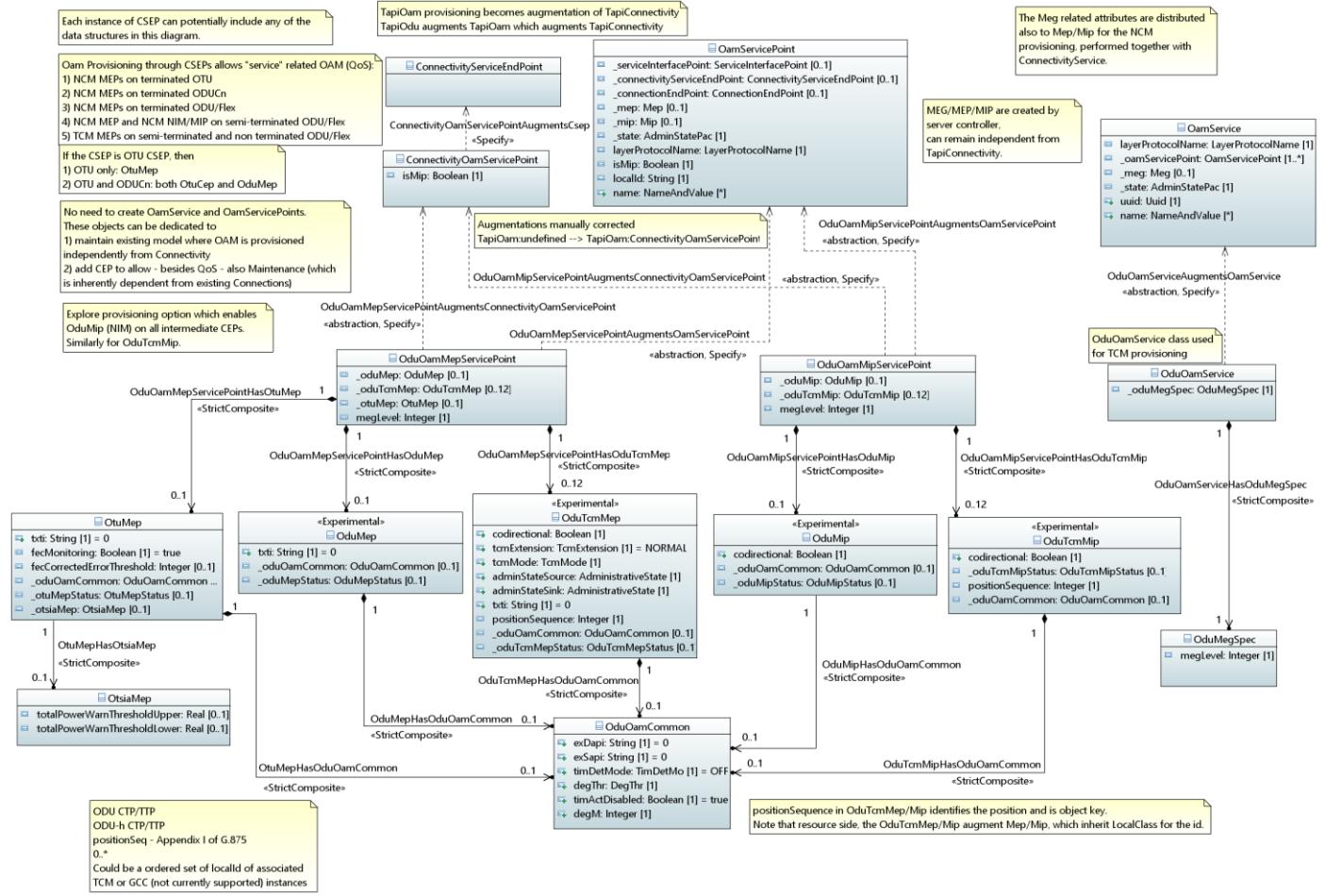
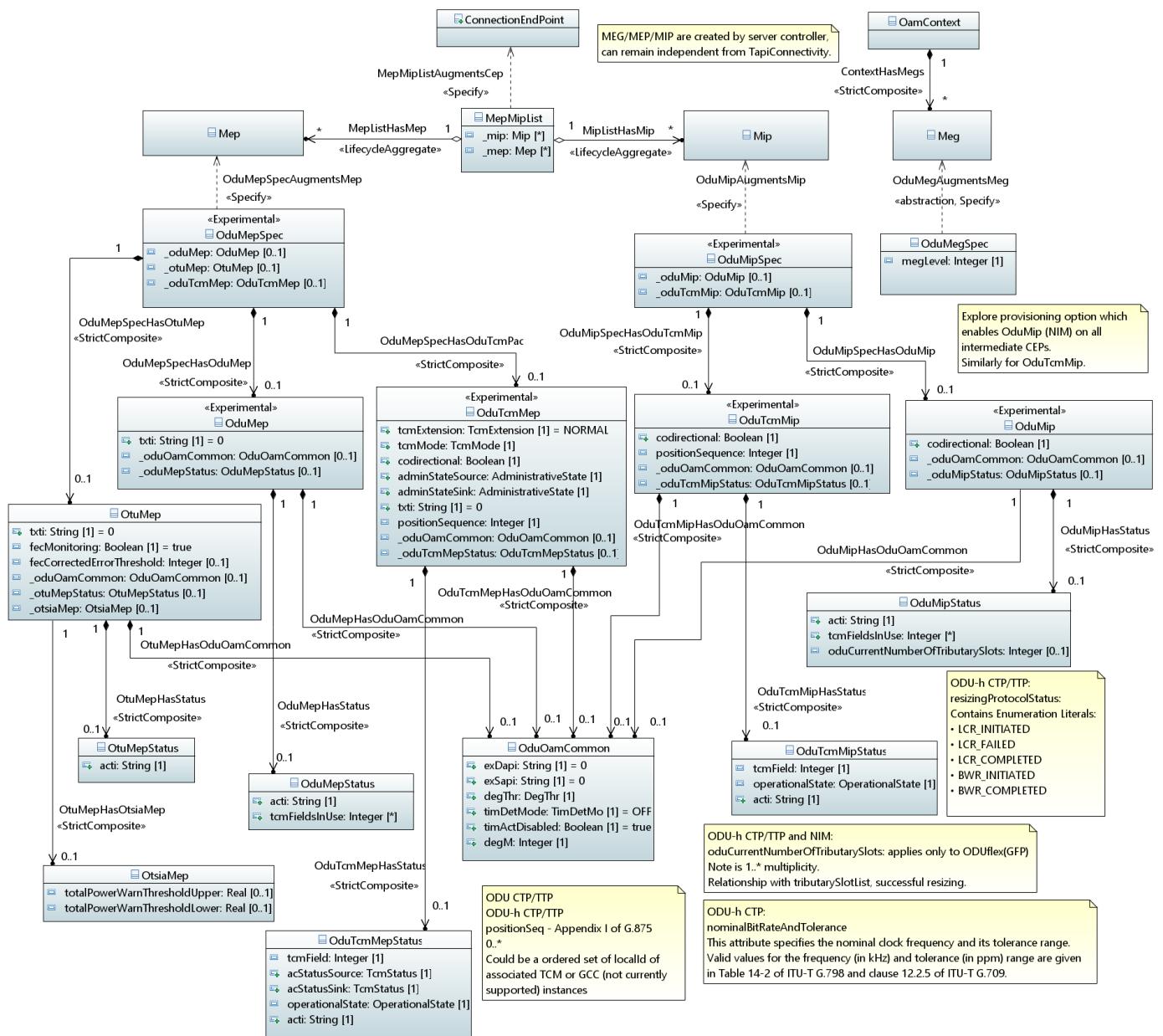
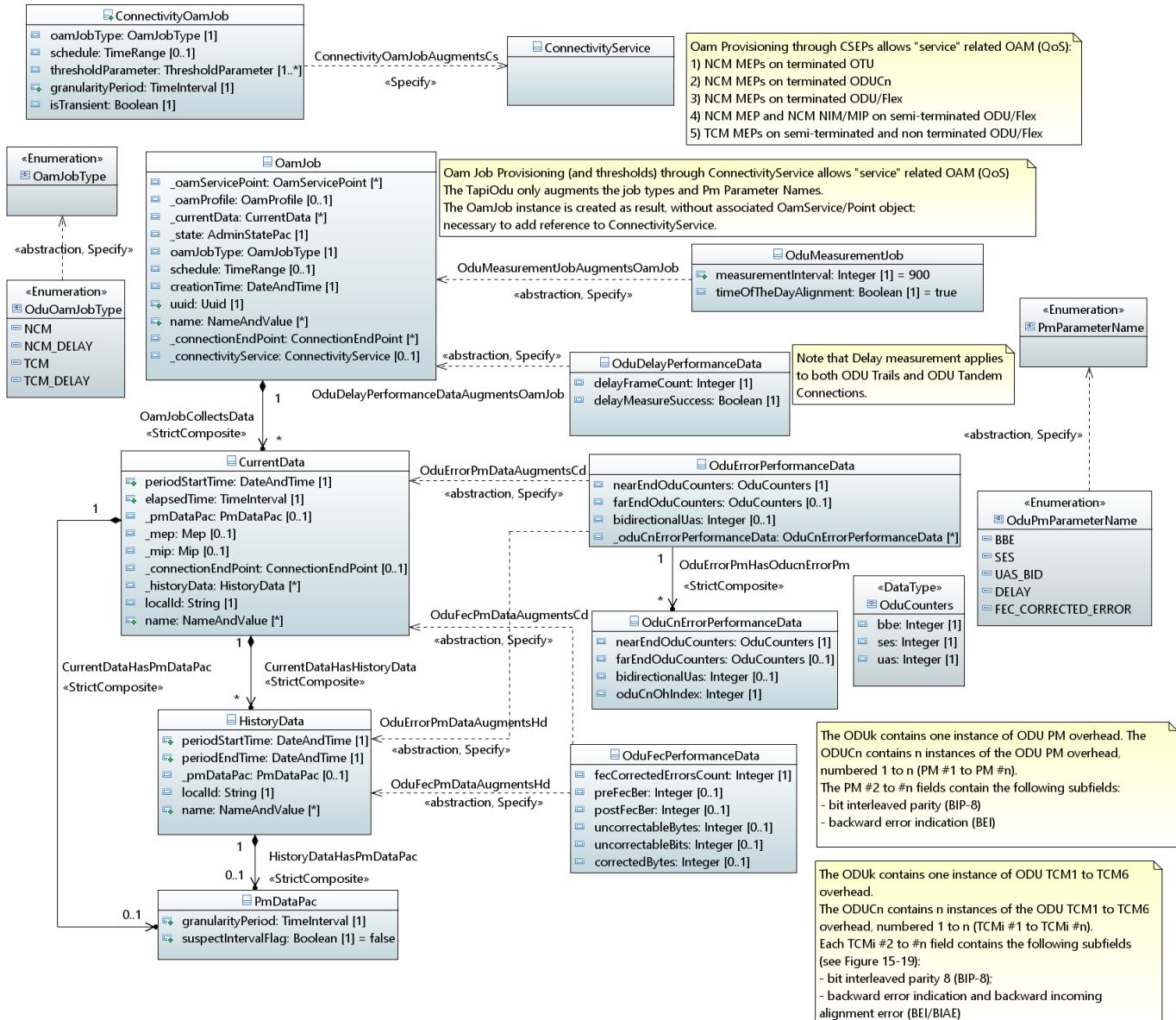
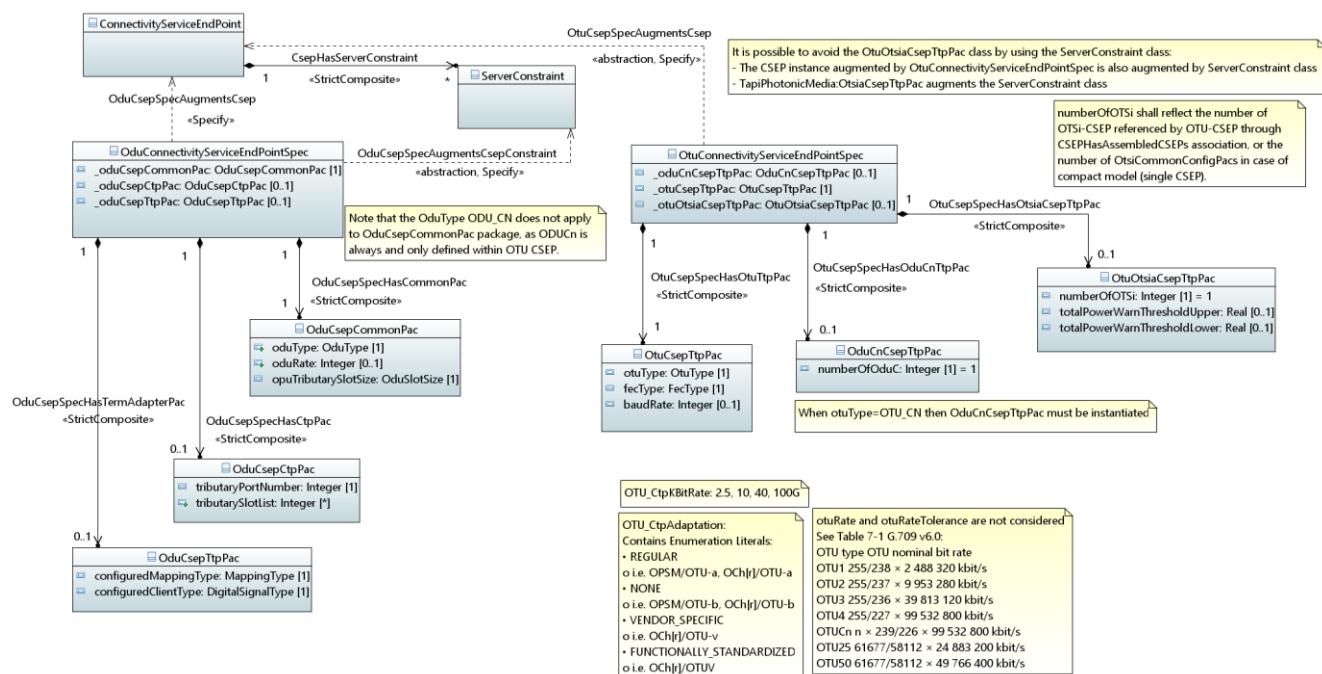
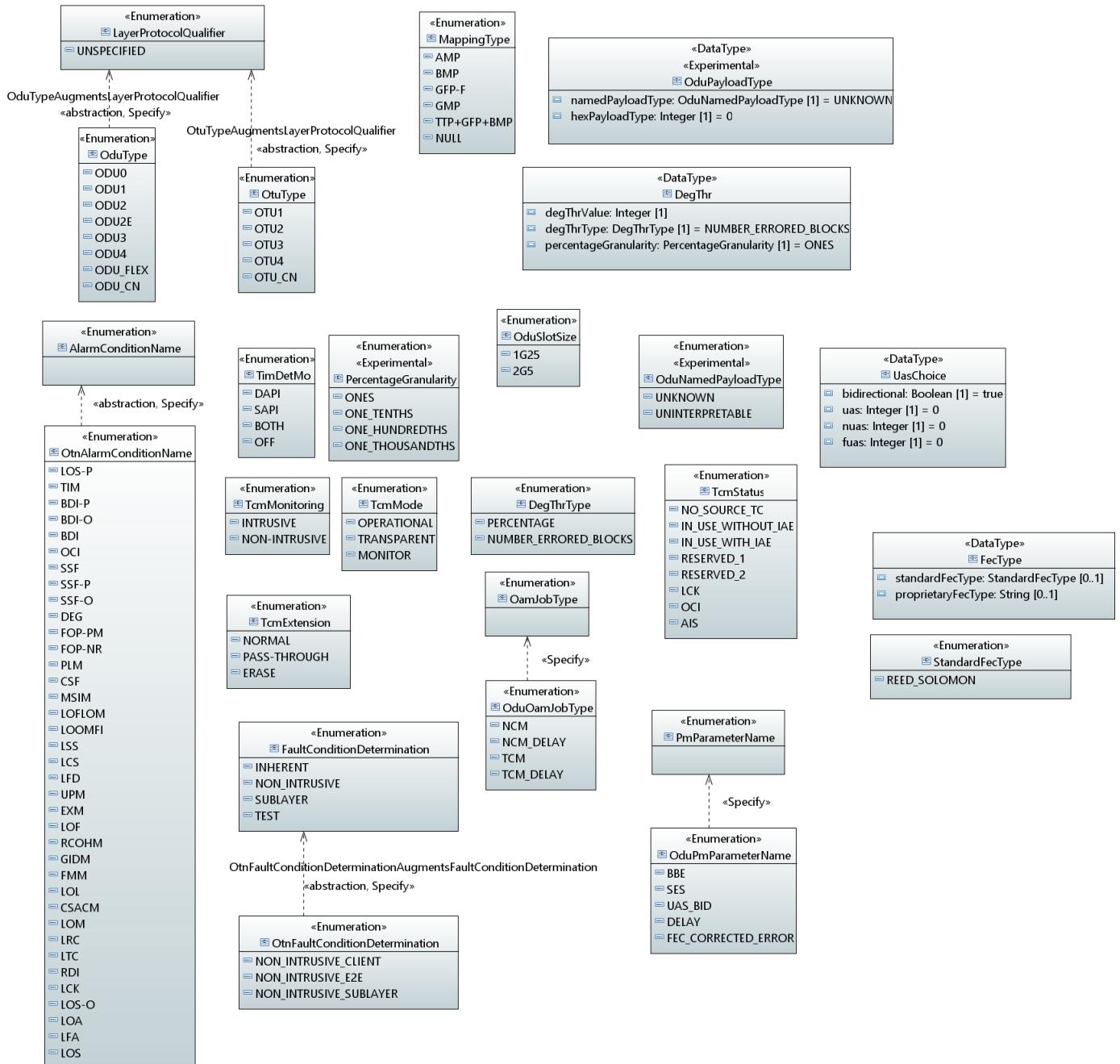


Figure 30 – *OduEndPointSpec*

Figure 31 – *OduOamServiceSpec*

Figure 32 – *OduOamSpec*

Figure 33 – *OduPmSpec*Figure 34 – *OduServiceSpec*

**Figure 35 – OduTypes**

9.2 Classes

9.2.1 OduCnCsepTtpPac

When **otuType=OTU_CN** then **OduCnCsepTtpPac** must be instantiated.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
numberOfOduC	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: This attribute specifies the number of ODUC instances of the ODUcn.

9.2.2 OduCnErrorPerformanceData

The ODUk contains one instance of ODU PM overhead. The ODUCn contains n instances of the ODU PM overhead, numbered 1 to n (PM #1 to PM #n). The PM #2 to #n fields contain the following subfields: - bit interleaved parity (BIP-8) - backward error indication (BEI) The ODUk contains one instance of ODU TCM1 to TCM6 overhead. The ODUCn contains n instances of the ODU TCM1 to TCM6 overhead, numbered 1 to n (TCMi #1 to TCMi #n). Each TCMi #2 to #n field contains the following subfields (see Figure 15-19): - bit interleaved parity 8 (BIP-8); - backward error indication and backward incoming alignment error (BEI/BIAE)

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
nearEndOduCounters	OduCounters	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:
farEndOduCounters	OduCounters	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:
bidirectionalUas	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:
oduCnOhIndex	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: The ODUCn contains n instances of the ODU PM/TCM overhead, numbered 1 to n (PM #1 to PM #n)/(TCMi #1 to TCMi #n).. This index specify the 2..n instance of the ODUCn PM/TCM overhead.				

9.2.3 OduCnTtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
numberOfOduC	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA OpenInterfaceModelAttribute
Description: This attribute specifies the number of ODUC instances of the ODUCn.				
_oduMep	OduMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA OpenInterfaceModelAttribute
Description:				

9.2.4 OduCommonPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
oduType	OduType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA OpenInterfaceModelAttribute
Description: This attribute specifies the type of the ODU termination point.				

Attribute Name	Type	Mult.	Access	Stereotypes
oduRate	Integer	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This attribute indicates the rate of the ODU termination point in Kbits/s. This attribute is Set at create; i.e., once created it cannot be changed directly. In case of resizable ODU flex, its value can be changed via HAO (not directly on the attribute). This attribute indicates the rate of the ODU termination point. Valid values shall be consistent with the oduType configuration as shown in Table 7-2/G.709 v5. Setting this value for fixed-rate ODUk types (e.g., ODU0), is optional. The default value is derived from the configured oduType, as defined in Table 7-2/G.709 v5. Setting this value for ODUCn type is optional. The default value is derived from the configured n of the ODUCn as defined in Table 7-2/G.709 v5.			
oduRateTolerance	Integer	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY • Deprecated • OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute indicates the rate tolerance of the ODU termination point. Valid values are real value in the unit of ppm. Standardized values are defined in Table 7-2/G.709.			

9.2.5 OduConnectionEndPointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: CONDITIONAL_MANDATORY
 - condition: ODU

Attribute Name	Type	Mult.	Access	Stereotypes
_oduCommon	OduCommonPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_oduTermAndAdapter	OduTerminationAndClientAdaptationPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_oduCtp	OduCtpPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
_oduProtection	OduProtectionPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

9.2.6 OduConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
_oduCsepCommonPac	OduCsepCommonPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
_oduCsepCtpPac	OduCsepCtpPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
_oduCsepTtpPac	OduCsepTtpPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

9.2.7 OduCsepCommonPac

Note that the OduType ODU_CN does not apply to OduCsepCommonPac package, as ODUCn is always and only defined within OTU CSEP.

Applied stereotypes:

- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
oduType	OduType	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> ● isKey: No ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute specifies the type of the ODU termination point.			
oduRate	Integer	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> ● isKey: No ● isInvariant: true ● valueRange: no range constraint ● support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute indicates the rate of the ODU termination point in Kbits/s. This attribute is Set at create; i.e., once created it cannot be changed directly. In case of resizable ODU flex, its value can be changed via HAO (not directly on the attribute). This attribute indicates the rate of the ODU termination point. Valid values shall be consistent with the oduType configuration as shown in Table 7-2/G.709 v5. Setting this value for fixed-rate ODUk types (e.g., ODU0), is optional. The default value is derived from the configured oduType, as defined in Table 7-2/G.709 v5. Setting this value for ODUCn type is optional. The default value is derived from the configured n of the ODUCn as defined in Table 7-2/G.709 v5.			
opuTributarySlotSize	OduSlotSize	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> ● AVC: NA
	Description: This attribute is applicable for ODU2 and ODU3 CTP only. It indicates the slot size of the ODU CTP.			

9.2.8 OduCsepCtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
tributaryPortNumber	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: The value range depends on the size of the Tributary Port Number (TPN) field used which depends on the server-layer ODU or OTU. In case of ODUk mapping into OTUk, there is no TPN field, so the tributaryPortNumber shall be zero. In case of LO ODUj mapping over ODU1, ODU2 or ODU3, the TPN is encoded in a 6-bit field so the value range is 0-63. See clause 14.4.1/G.709-2016. In case of LO ODUj mapping over ODU4, the TPN is encoded in a 7-bit field so the value range is 0-127. See clause 14.4.1.4/G.709-2016. In case of ODUk mapping over ODUCn, the TPN is encoded in a 14-bit field so the value range is 0-16383. See clause 20.4.1.1/G.709-2016. • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA <p>Description:</p> <p>This attribute identifies the tributary port number that is associated with the ODUk CTP. This attribute applies when the ODUk CTP is multiplexed into a server layer ODU TTP object. It will not apply if this ODUk CTP object is directly mapped into an OTUk TTP object (i.e. OTUk has no tributary slots). The upper bound of the integer allowed in this set is a function of the ODU server layer into which the ODUk CTP is multiplexed. In case the ODU server layer is an HO-ODUk, the upper bound is the maximum number of tributary slots within the HO-ODUk (see ITU-T Recommendation G.709 (v5) clause 19.4.1). Thus, for example, M=8/32/80 for ODU2/ODU3/ODU4 server layers (respectively) using 1.25G slot size. In case the ODU server layer is an ODUCn, the upper bound is M=10*n (see ITU-T Recommendation G.709 (v5) Clause 20.4.1).</p>
tributarySlotList	Integer	0..*	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA <p>Description:</p> <p>ITU-T G.875 (v5) This attribute contains a set of distinct (i.e. unique) integers (e.g. 2, 3, 5, 9, 15 representing the tributary slots TS#2, TS#3, TS#5, TS#9 and TS#15) which represents the resources occupied by the ODUk CTP (e.g. an ODUflex with a bit rate of 6.25G setup over an HO-ODUk). This attribute applies when the ODUk CTP is carried by a sever layer ODU TTP object. It will not apply if this ODUk CTP object is directly carried by an OTUk TTP object (i.e. OTUk has no tributary slots). The upper bound of the integer allowed in this set and its relationship with the tributary slots are a function of the ODU server layer to which the ODUk CTP is carried over. In case the ODU server layer is an HO-ODUk, each entry in the list is an integer value (i) representing the tributary slot name TS#i and the upper bound is the maximum number of tributary slots within the HO-ODUk (see ITU-T Recommendation G.709 (v5) clause 19). Thus, for example, M=8/32/80 for ODU2/ODU3/ODU4 server layers (respectively) using 1.25G slot size. In case the ODU server layer is an ODUCn, each entry in the list is an integer value (P) representing the time slot name TS#A.B (e.g. 2, 3, 5, 9, 15, 34 representing the tributary slots TS#1.2, TS#1.3, TS#1.5, TS#1.9, TS#1.15, and TS#2.14) and the upper bound is 20*n (see ITU-T Recommendation G.709 (v5) Clause 20.1). The mapping between P and A & B is: A = [P/20] + 1; B = P - (P/20)*20; where the square bracket represents the whole integer. Note that the value of this attribute can be changed only in the case of ODUflex and has to be through specific operations (i.e. not be changing the attribute tributarySlotList directly).</p>

9.2.9 OduCsepTtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
configuredMappingType	MappingType	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
	This attribute indicates the configured mapping type.			
configuredClientType	DigitalSignalType	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
	This attribute configures the type of the client CTP of the server ODU TTP.			

9.2.10 OduCtpPac

This Pac contains the attributes associated with the CTP It is present only if the CEP contains a CTP

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
tributarySlotList	Integer	0..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
	ITU-T G.875 (v5) This attribute contains a set of distinct (i.e. unique) integers (e.g. 2, 3, 5, 9, 15 representing the tributary slots TS#2, TS#3, TS#5, TS#9 and TS#15) which represents the resources occupied by the ODUk CTP (e.g. an ODUflex with a bit rate of 6.25G setup over an HO-ODUk). This attribute applies when the ODUk CTP is carried by a sever layer ODU TTP object. It will not apply if this ODUk CTP object is directly carried by an OTUk TTP object (i.e. OTUk has no tributary slots). The upper bound of the integer allowed in this set and its relationship with the tributary slots are a function of the ODU server layer to which the ODUk CTP is carried over. In case the ODU server layer is an HO-ODUk, each entry in the list is an integer value (i) representing the tributary slot name TS#i and the upper bound is the maximum number of tributary slots within the HO-ODUk (see ITU-T Recommendation G.709 (v5) clause 19). Thus, for example, M=8/32/80 for ODU2/ODU3/ODU4 server layers (respectively) using 1.25G slot size. In case the ODU server layer is an ODUCn, each entry in the list is an integer value (P) representing the time slot name TS#A.B (e.g. 2, 3, 5, 9, 15, 34 representing the tributary slots TS#1.2, TS#1.3, TS#1.5, TS#1.9, TS#1.15, and TS#2.14) and the upper bound is 20*n (see ITU-T Recommendation G.709 (v5) Clause 20.1). The mapping between P and A & B is: A = [P/20] + 1; B = P - (P/20)*20; where the square bracket represents the whole integer. Note that the value of this attribute can be changed only in the case of ODUflex and has to be through specific operations (i.e. not be changing the attribute tributarySlotList directly).			

Attribute Name	Type	Mult.	Access	Stereotypes
tributaryPortNumber	Integer	1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: The value range depends on the size of the Tributary Port Number (TPN) field used which depends on the server-layer ODU or OTU. In case of ODUk mapping into OTUk, there is no TPN field, so the tributaryPortNumber shall be zero. In case of LO ODUj mapping over ODU1, ODU2 or ODU3, the TPN is encoded in a 6-bit field so the value range is 0-63. See clause 14.4.1/G.709-2016. In case of LO ODUj mapping over ODU4, the TPN is encoded in a 7-bit field so the value range is 0-127. See clause 14.4.1.4/G.709-2016. In case of ODUk mapping over ODUCn, the TPN is encoded in a 14-bit field so the value range is 0-16383. See clause 20.4.1.1/G.709-2016. • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
<p>This attribute identifies the tributary port number that is associated with the ODUk CTP. This attribute applies when the ODUk CTP is multiplexed into a server layer ODU TTP object. It will not apply if this ODUk CTP object is directly mapped into an OTUk TTP object (i.e. OTUk has no tributary slots). The upper bound of the integer allowed in this set is a function of the ODU server layer into which the ODUk CTP is multiplexed. In case the ODU server layer is an HO-ODUk, the upper bound is the maximum number of tributary slots within the HO-ODUk (see ITU-T Recommendation G.709 (v5) clause 19.4.1). Thus, for example, M=8/32/80 for ODU2/ODU3/ODU4 server layers (respectively) using 1.25G slot size. In case the ODU server layer is an ODUCn, the upper bound is M=10*n (see ITU-T Recommendation G.709 (v5) Clause 20.4.1).</p>				
acceptedMSI	byte	0..1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • Experimental • OpenInterfaceModelAttribute • AVC: NA
Description:				
<p>This attribute is applicable when the ODU CTP object instance represents a lower order ODU1 or ODU2 CTP Sink at the client layer of the ODU3P/ODU12 adaptation function or represents a lower order ODUj CTP Sink at the client layer of the ODUP/ODUj-21 adaptation function. This attribute is a 1-byte field that represents the accepted multiplex structure of the adaptation function.</p>				
_oduMip	OduMip	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.11 OduDelayPerformanceData

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
delayFrameCount	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
				Summation of the number of frames between the DMValue toggle event and the received DMp signal value toggle event. This value is a snapshot value.
delayMeasureSuccess	Boolean	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.12 OduErrorPerformanceData

ODU/OTU PM Metrics.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
nearEndOduCounters	OduCounters	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
farEndOduCounters	OduCounters	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
bidirectionalUas	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
_oduCnErrorPerformanceData	OduCnErrorPerformanceData	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

9.2.13 OduFecPerformanceData

The OTU FEC PM Metrics.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes	
fecCorrectedErrorsCount	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA 	
Description:		ITU-T G798: The number of bits corrected by the FEC are counted over one second and reported to the MI at the end of the second. For the application of this filter, see the specific atomic functions. During signal fail conditions of the data signal, no corrected bits shall be counted. For details on the signal fail conditions, see the specific atomic functions.			
preFecBer	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA 	
Description:		counter: bit error rate before correction by FEC			
postFecBer	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA 	
Description:		counter: bit error rate after correction by FEC			
uncorrectableBytes	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA 	
Description:		Bytes that could not be corrected by FEC			

Attribute Name	Type	Mult.	Access	Stereotypes
uncorrectableBits	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
Bits that could not be corrected by FEC				
correctedBytes	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
Bytes corrected between those that were received corrupted				

9.2.14 OduMeasurementJob

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
measurementInterval	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains the discrete non overlapping periods of time (in seconds) during which measurements are performed and reports are gathered at the end of the measurement intervals. Note that the value 0 means a degenerated measurement interval with a single OAM message and the report is sent as immediately as possible.				
timeOfDayAlignment	Boolean	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.15 OduMegSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
megLevel	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.16 OduMep

If the CSEP is OTU CSEP, then 1) OTU only: OtuMep, 2) OTU and ODUCn: both OtuCep and OduMep.

Applied stereotypes:

- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
txti	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				The Trail Trace Identifier (TTI) information, provisioned by the managing system at the termination source, to be placed in the TTI overhead position of the source of a trail for transmission.
_oduOamCommon	OduOamCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
_oduMepStatus	OduMepStatus	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.17 OduMepSpec

Applied stereotypes:

- Experimental

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: CONDITIONAL_MANDATORY
 - condition: ODU

Attribute Name	Type	Mult.	Access	Stereotypes
_oduMep	OduMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otuMep	OtuMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_oduTcmMep	OduTcmMep	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.18 OduMepStatus

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
acti	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.				

Attribute Name	Type	Mult.	Access	Stereotypes
tcmFieldsInUse	Integer	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

9.2.19 OduMip

Applied stereotypes:

- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduOamCommon	OduOamCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
codirectional	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
_oduMipStatus	OduMipStatus	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

9.2.20 OduMipSpec

Applied stereotypes:

- Experimental
- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduMip	OduMip	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
Description:				
_oduTcmMip	OduTcmMip	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
Description:				

9.2.21 OduMipStatus

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
acti	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
Description:				
The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.				
tcmFieldsInUse	Integer	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA
Description:				
This attribute indicates the used TCM fields of the ODU OH.				
oduCurrentNumberOfTributarySlots	Integer	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> ● AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>This attribute applies only to ODUflex(GFP) connections. It represents the current number of tributary slots allocated to this ODUflex(GFP) connection in the HO-ODU server layer.</p>				

9.2.22 OduNodeEdgePointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- Preliminary
- OpenModelClass
 - support: CONDITIONAL_MANDATORY
 - condition: **ODU**

Attribute Name	Type	Mult.	Access	Stereotypes
_oduPool	OduPoolPac	0..1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA <p>Description:</p>

9.2.23 OduOamCommon

Common ODU OAM parameters. Note that the object is read/write or read-only depending on the context, i.e. if is part of CSEP is R/W, while if is part of CEP is read-only. Note that both the ODUk and ODUCn contain only one instance of ODU PM TTI overhead and ODU PM DMp overhead. Note that the ODUCn contains n instances of the ODU PM overhead: The OduOamCommon degThr and degM apply to the n instances of ODUCn PM OH.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
exDapi	String	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA <p>Description:</p> <p>The Expected Destination Access Point Identifier (ExDAPI), provisioned by the managing system, to be compared with the TTI accepted at the overhead position of the sink for the purpose of checking the integrity of connectivity.</p>

Attribute Name	Type	Mult.	Access	Stereotypes
exSapi	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The Expected Source Access Point Identifier (ExSAPI), provisioned by the managing system, to be compared with the TTI accepted at the overhead position of the sink for the purpose of checking the integrity of connectivity.			
degThr	DegThr	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute indicates the threshold level for declaring a performance monitoring (PM) Second to be bad. The value of the threshold can be provisioned in terms of number of errored blocks or in terms of percentage of errored blocks. For percentage-based specification, in order to support provision of less than 1%, the specification consists of two fields. The first field indicates the granularity of percentage. For examples, in 1%, in 0.1%, or in 0.01%, etc. The second field indicates the multiple of the granularity. For number of errored block based, the value is a positive integer.			
timDetMode	TimDetMo	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute indicates the mode of the Trace Identifier Mismatch (TIM) Detection function allowed values: OFF, SAPlonly, DAPIonly, SAPlandDAPI			
timActDisabled	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute provides the control capability for the managing system to enable or disable the Consequent Action function when detecting Trace Identifier Mismatch (TIM) at the trail termination sink.			
degM	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	This attribute indicates the threshold level for declaring a Degraded Signal defect (dDEG). A dDEG shall be declared if DegM consecutive bad PM Seconds are detected.			

9.2.24 OduOamMepServicePoint

Two alternative provisioning scenarios: 1) Oam provisioning through CSEPs for "service" related OAM (QoS) - provisioning joint to ConnectivityService. In this case the ODU MEP and MIP parameters are included (composed) in resp. ODU CEP TTP and CTP instances, i.e. no distinct ODU MEP/MIP instances. This provisioning scenario could apply for: a) NCM MEPs on terminated OTU b) NCM MEPs on terminated ODUCn c) NCM MEPs on terminated ODU/Flex d) NCM MEP and NCM NIM/MIP on semi-terminated ODU/Flex e) TCM MEPs on semi-terminated and non terminated ODU/Flex The Meg related attributes are

distributed also to Mep/Mip for this provisioning scenario which does not involve OduOamService/ServicePoints. 2) Oam provisioning through OduOamService/ServicePoints for "maintenance" related OAM. In this case the distinct ODU MEP and MIP instances are created, referred (by name) by resp. ODU CEP TTP and CTP. This provisioning scenario could apply for TCM or NIM at any segment of the Service.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduMep	OduMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_oduTcmMep	OduTcmMep	0..12	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otuMep	OtuMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
megLevel	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.25 OduOamMipServicePoint

See OduOamMepService point comment.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduMip	OduMip	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_oduTcmMip	OduTcmMip	0..12	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
megLevel	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.26 OduOamService

OduOamService class is used for TCM provisioning.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduMegSpec	OduMegSpec	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.27 OduPoolPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA

- objectDeletionNotification: NA
- Preliminary
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
clientCapacity	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description:			
maxClientInstances	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description:			
maxClientSize	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description:			

9.2.28 OduProtectionPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- Preliminary
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
apsEnable	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ● isKey: No ● isInvariant: false ● valueRange: no range constraint ● support: MANDATORY OpenInterfaceModelAttribute ● AVC: NA
	Description:			
	This attribute is for enabling/disabling the automatic protection switching (APS) capability at the transport adaptation function that is represented by the ODU_ConnectionTerminationPoint object class. It triggers the MI_APS_EN signal to the transport adaptation function.			

Attribute Name	Type	Mult.	Access	Stereotypes
apsLevel	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

9.2.29 OduTcmMep

Applied stereotypes:

- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
codirectional	Boolean	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
tcmExtension	TcmExtension	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
tcmMode	TcmMode	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
adminStateSource	AdministrativeState	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute provides the capability to provision the LOCK signal at the source, which is one of the ODU maintenance signals. When a Tandem Connection endpoint is set to admin state locked, it will insert the ODU-LCK signal in the source direction.			
adminStateSink	AdministrativeState	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	This attribute provides the capability to provision the LOCK signal at the sink, which is one of the ODU maintenance signals. When a Tandem Connection endpoint is set to admin state locked, it will insert the ODU-LCK signal in the downstream direction.			
txti	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The Trail Trace Identifier (TTI) information, provisioned by the managing system at the termination source, to be placed in the TTI overhead position of the source of a trail for transmission.			
positionSequence	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
_oduOamCommon	OduOamCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
_oduTcmMepStatus	OduTcmMepStatus	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			

9.2.30 OduTcmMepStatus

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
tcnField	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the tandem connection monitoring field of the ODU OH.				
acStatusSource	TcmStatus	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the status of the accepted TCM.				
acStatusSink	TcmStatus	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute indicates the status of the accepted TCM.				
operationalState	OperationalState	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
acti	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.				

9.2.31 OduTcmMip

Applied stereotypes:

- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
codirectional	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: This attribute specifies the directionality of the ODU MIP with respect to the associated ODU CEP. The value of TRUE means that the (half MIP/sink part of the) ODU MIP receives the same signal direction as the sink part of the ODU CEP. The Source part behaves similarly. This attribute is meaningful only on objects instantiated under ODU CEP, and at least one among ODU CEP and the subordinate object is bidirectional.			
_oduOamCommon	OduOamCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_oduTcmMipStatus	OduTcmMipStatus	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
positionSequence	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

9.2.32 OduTcmMipStatus

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
tcmField	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: This attribute indicates the tandem connection monitoring field of the ODU OH.			
operationalState	OperationalState	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
acti	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.			

9.2.33 OduTerminationAndClientAdaptationPac

This Pac contains the attributes associated with the client adaptation function of the server layer TTP. It is present only if the CEP contains a TTP.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelAttribute
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
opuTributarySlotSize	OduSlotSize	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute is applicable for ODU2 and ODU3 CTP only. It indicates the slot size of the ODU CTP.			
autoPayloadType	Boolean	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: This attribute is applicable when the ODU CTP object instance represents a lower order ODU CTP Source at the client layer of the ODUP/ODUj-21 adaptation function. The value of true of this attribute configures that the adaptation source function shall fall back to the payload type PT=20 if the conditions specified in 14.3.10.1/G.798 are satisfied.			

Attribute Name	Type	Mult.	Access	Stereotypes
configuredClientType	DigitalSignalType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
This attribute configures the type of the client CTP of the server ODU TTP.				
configuredMappingType	MappingType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the configured mapping type.				
acceptedPayloadType	OduPayloadType	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute is applicable when the ODU CTP object instance represents a lower order ODU CTP Sink at the client layer of the ODUP/ODU[i;j] or ODUP/ODUj-21 adaptation function. This attribute is a 2-digit Hex code that indicates the new accepted payload type. Valid values are defined in Table 15-8 of ITU-T Recommendation G.709 with one additional value UN_INTERPRETABLE.				
oduCnEffectiveTimeSlotList	Integer	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute contains a set of distinct (i.e. unique) integers (e.g. 2, 3, 5, 9, 15, 34 representing the tributary slots TS#1.2, TS#1.3, TS#1.5, TS#1.9, TS#1.15, and TS#2.14) which represents the list of effective time slots which are available for carrying ODUk clients. Each entry in the list is an integer value (P) representing the time slot name TS#A.B (see ITU-T Recommendation G.709 (v5) Clause 20.1). The mapping between P and A & B is: A = [P/20] + 1; B = P - (P/20)*20; where the square bracket represents the whole integer.				
_oduMep	OduMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.34 OtsiaMep

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
totalPowerWarnThresholdUpper	Real	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
Allows to configure the upper power threshold on whole Assembly scope.				
totalPowerWarnThresholdLower	Real	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
Allows to configure the lower power threshold on whole Assembly scope.				

9.2.35 OtuConnectionEndPointSpec

Note that the OTU CEP includes OTSiA "termination&adaptation".

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_otuTtpPac	OtuTtpPac	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
_oduCnTtpPac	OduCnTtpPac	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.36 OtuConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass

- support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_oduCnCsepTtpPac	OduCnCsepTtpPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otuCsepTtpPac	OtuCsepTtpPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otuOtsiaCsepTtpPac	OtuOtsiaCsepTtpPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.37 OtuCsepTtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
otuType	OtuType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
fecType	FecType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
baudRate	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:		The baud rate in terms of giga baud. baud = bit/symbol, and the baud rate is hence sometimes referred to as the symbol rate		

9.2.38 OtuMep

If the CSEP is OTU CSEP, then 1) OTU only: OtuMep 2) OTU and ODUcn: both OtuCep and OduMep

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
txti	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:		The Trail Trace Identifier (TTI) information, provisioned by the managing system at the termination source, to be placed in the TTI overhead position of the source of a trail for transmission.		
_oduOamCommon	OduOamCommon	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otuMepStatus	OtuMepStatus	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
fecMonitoring	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
fecCorrectedErrorThreshold	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
_otsiaMep	OtsiaMep	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.2.39 OtuMepStatus

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
acti	String	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.

9.2.40 OtuOtsiaCsepTtpPac

This class is used to specify OTSiA provisioning parameters together with OTU parameters. Alternatively it is possible to avoid the OtuOtsiaCsepTtpPac class by using the ServerConstraint class: 1) The CSEP instance augmented by OtuConnectivityServiceEndPointSpec is also augmented by the ServerConstraint class, 2) TapiPhotonicMedia:OtsiaCsepTtpPac augments the ServerConstraint class. Another alternative is that both OtuConnectivityServiceEndPointSpec and TapiPhotonicMedia:OtsiaCsepTtpPac augment the same CSEP instance. Note that the ServerConstraint class is useful in the case of "array" augmentations, i.e. when a CSEP instance shall be augmented by more than one instance of a spec class.

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
numberOfOTSi	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: numberOfOTSi shall reflect the number of OTSi-CSEP referenced by OTU-CSEP through CSEPHasAssembledCSEPs association, or the number of OtsiCommonConfigPacs in case of compact model (single CSEP).			
totalPowerWarnThresholdUpper	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Allows to configure the upper power threshold on whole Assembly scope.			
totalPowerWarnThresholdLower	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Allows to configure the lower power threshold on whole Assembly scope.			

9.2.41 OtuTtpPac

Applied stereotypes:

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- OpenModelClass
 - support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
otuType	OtuType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_otuMep	OtuMep	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes
fecType	FecType	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
baudRate	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				The baud rate in terms of giga baud. baud = bit/symbol, and the baud rate is hence sometimes referred to as the symbol rate

9.3 Associations

9.3.1 OduCepHasProtectionPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduProtection	composite	Yes	OduProtectionPac	0..1
oduconnectionendpointspec	none	No	OduConnectionEndPointSpec	1

9.3.2 OduCepSpecHasCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCommon	composite	Yes	OduCommonPac	1
oduconnectionendpointspec	none	No	OduConnectionEndPointSpec	1

9.3.3 OduCepSpecHasCtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCtp	composite	Yes	OduCtpPac	0..1
lpSpec	none	No	OduConnectionEndPointSpec	1

9.3.4 OduCepSpecHasTermAdapterPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTermAndAdapter	composite	Yes	OduTerminationAndClientAdaptationPac	0..1
_lpSpec	none	No	OduConnectionEndPointSpec	1

9.3.5 OduCnTtpCepHasOduMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMep	composite	Yes	OduMep	0..1
oducntrppac	none	No	OduCnTtpPac	1

9.3.6 OduCsepSpecHasCommonPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCsepCommonPac	composite	Yes	OduCsepCommonPac	1
oduconnectivityserviceendpointspec	none	No	OduConnectivityServiceEndPointSpec	1

9.3.7 OduCsepSpecHasCtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCsepCtpPac	composite	Yes	OduCsepCtpPac	0..1
oduconnectivityserviceendpointspec	none	No	OduConnectivityServiceEndPointSpec	1

9.3.8 OduCsepSpecHasTermAdapterPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCsepTtpPac	composite	Yes	OduCsepTtpPac	0..1
oduconnectivityserviceendpointspec	none	No	OduConnectivityServiceEndPointSpec	1

9.3.9 OduCtpCepHasOduMip

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMip	composite	Yes	OduMip	0..1
oductppac	none	No	OduCtpPac	1

9.3.10 OduErrorPmHasOduCnErrorPm

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCnErrorPerformanceData	none	Yes	OduCnErrorPerformanceData	0..*
oduerrorperformancedata	none	No	OduErrorPerformanceData	1

9.3.11 OduMepHasOduOamCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduOamCommon	composite	Yes	OduOamCommon	0..1
odumeppac	none	No	OduMep	1

9.3.12 OduMepHasStatus

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMepStatus	composite	Yes	OduMepStatus	0..1
odumep	none	No	OduMep	1

9.3.13 OduMepSpecHasOduMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMep	composite	Yes	OduMep	0..1
odumepspec	none	No	OduMepSpec	1

9.3.14 OduMepSpecHasOduTcmPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMep	composite	Yes	OduTcmMep	0..1
odumepspec	none	No	OduMepSpec	1

9.3.15 OduMepSpecHasOtuMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuMep	composite	Yes	OtuMep	0..1
odumepspec	none	No	OduMepSpec	1

9.3.16 OduMipHasOduOamCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduOamCommon	none	Yes	OduOamCommon	0..1
odumippac	none	No	OduMip	1

9.3.17 OduMipHasStatus

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMipStatus	composite	Yes	OduMipStatus	0..1
odumip	none	No	OduMip	1

9.3.18 OduMipSpecHasOduMip

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMip	composite	Yes	OduMip	0..1
odumipspec	none	No	OduMipSpec	1

9.3.19 OduMipSpecHasOduTcmMip

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMip	composite	Yes	OduTcmMip	0..1
odumipspec	none	No	OduMipSpec	1

9.3.20 OduNepSpecHasPoolPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduPool	composite	Yes	OduPoolPac	0..1
lpSpec	none	No	OduNodeEdgePointSpec	1

9.3.21 OduOamMepServicePointHasOduMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMep	composite	Yes	OduMep	0..1
odouoammepservicepoint	none	No	OduOamMepServicePoint	1

9.3.22 OduOamMepServicePointHasOduTcmMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMep	composite	Yes	OduTcmMep	0..12
oduoammepservicepoint	none	No	OduOamMepServicePoint	1

9.3.23 OduOamMepServicePointHasOtuMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuMep	composite	Yes	OtuMep	0..1
oduoammepservicepoint	none	No	OduOamMepServicePoint	1

9.3.24 OduOamMipServicePointHasOduMip

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMip	composite	Yes	OduMip	0..1
oduoammipservicepoint	none	No	OduOamMipServicePoint	1

9.3.25 OduOamMipServicePointHasOduTcmMip

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMip	composite	Yes	OduTcmMip	0..12
oduoammipservicepoint	none	No	OduOamMipServicePoint	1

9.3.26 OduOamServiceHasOduMegSpec

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMegSpec	composite	Yes	OduMegSpec	1
oduoamservice	none	No	OduOamService	1

9.3.27 OduTcmMepHasOduOamCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduOamCommon	composite	Yes	OduOamCommon	0..1
odutcmmp	none	No	OduTcmMep	1

9.3.28 OduTcmMepHasStatus

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMepStatus	composite	Yes	OduTcmMepStatus	0..1
odutcmmp	none	No	OduTcmMip	1

9.3.29 OduTcmMipHasOduOamCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduOamCommon	composite	Yes	OduOamCommon	0..1
odutcmmp	none	No	OduTcmMip	1

9.3.30 OduTcmMipHasStatus

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduTcmMipStatus	composite	Yes	OduTcmMipStatus	0..1
odutcmmp	none	No	OduTcmMip	1

9.3.31 OduTtpCepHasOduMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduMep	composite	Yes	OduMep	0..1
oduconnectionendpointspec	none	No	OduTerminationAndClientAdaptationPac	1

9.3.32 OtuCepSpecHasOduCnTtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCnTtpPac	composite	Yes	OduCnTtpPac	0..1
otuconnectionendpointspec	none	No	OtuConnectionEndPointSpec	1

9.3.33 OtuCepSpecHasOtuTtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuTtpPac	composite	Yes	OtuTtpPac	1
otuconnectionendpointspec	none	No	OtuConnectionEndPointSpec	1

9.3.34 OtuCsepSpecHasOduCnTtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduCnCsepTtpPac	composite	Yes	OduCnCsepTtpPac	0..1
otuconnectivityserviceendpointspec	none	No	OtuConnectivityServiceEndPointSpec	1

9.3.35 OtuCsepSpecHasOtsiaCsepTtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuOtsiaCsepTtpPac	composite	Yes	OtuOtsiaCsepTtpPac	0..1
otuconnectivityserviceendpointspec	none	No	OtuConnectivityServiceEndPointSpec	1

9.3.36 OtuCsepSpecHasOtuTtpPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
otuCsepTtpPac	composite	Yes	OtuCsepTtpPac	1
otuconnectivityserviceendpointspec	none	No	OtuConnectivityServiceEndPointSpec	1

9.3.37 OtuMepHasOduOamCommon

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_oduOamCommon	composite	Yes	OduOamCommon	0..1
otumeppac	none	No	OtuMep	1

9.3.38 OtuMepHasOtsiaMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiaMep	none	Yes	OtsiaMep	0..1
otumep	none	No	OtuMep	1

9.3.39 OtuMepHasStatus

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuMepStatus	composite	Yes	OtuMepStatus	0..1
otumep	none	No	OtuMep	1

9.3.40 OtuTtpCepHasOtuMep

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otuMep	composite	Yes	OtuMep	0..1
otutpppac	none	No	OtuTtpPac	1

9.4 Data Types

9.4.1 DegThr

Degraded Threshold, specify either the percentage or the number of Errorred Blocks in the defined interval. 1) degThrValue when type is PERCENTAGE: percentageGranularity is used to indicate the number of decimal points. So if percentageGranularity is ones, a value of 1 in degThrValue would indicate 1%, a value of 10 = 10%, a value of 100 = 100%. So if percentageGranularity is thousandths a value of 1 in degThrValue would indicate 0.001%, a value of 1000 = 1%, a value of 1000000 = 100%. 2) degThrValue when type is NUMBER_ERROR_BLOCKS: Number of Errorred Blocks is captured in an integer value.

Attribute Name	Type	Mult.	Access	Stereotypes
degThrValue	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: Percentage of detected errored blocks
degThrType	DegThrType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: Number of errored blocks
percentageGranularity	PercentageGranularity	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:

9.4.2 FecType

The specification of OTU FEC Type. The standardFecType and proprietaryFecType attributes are mutually exclusive.

Attribute Name	Type	Mult.	Access	Stereotypes
standardFecType	StandardFecType	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description:

Attribute Name	Type	Mult.	Access	Stereotypes
proprietaryFecType	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

9.4.3 OduCounters

Attribute Name	Type	Mult.	Access	Stereotypes
bbe	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
ses	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
uas	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.4.4 OduPayloadType

Attribute Name	Type	Mult.	Access	Stereotypes
namedPayloadType	OduNamedPayloadType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
hexPayloadType	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

9.4.5 UasChoice

If bidirectional is TRUE then use the uas attribute, if bidirectional is FALSE use the nuas, and fuas attributes.

Attribute Name	Type	Mult.	Access	Stereotypes
bidirectional	Boolean	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
uas	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
nuas	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
fuas	Integer	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

9.5 Enumerations

9.5.1 DegThrType

The value of the threshold can be provisioned in terms of number of errored blocks or in terms of percentage of errored blocks. For percentage-based specification, in order to support provision of less than 1%, the specification consists of two fields. The first field indicates the granularity of percentage. For examples, in 1%, in 0.1%, or in 0.01%, etc. The second field indicates the multiple of the granularity. For number of errored block based, the value is a positive integer.

Contains Enumeration Literals:

- PERCENTAGE:
 - Choice of % or Number of errored blocks
- NUMBER_ERRORED_BLOCKS:
 - Number of % or blocks

9.5.2 MappingType

Contains Enumeration Literals:

- AMP:
- BMP:
- GFP-F:
- GMP:
- TTP+GFP+BMP:
- NULL:

9.5.3 OduNamedPayloadType

Contains Enumeration Literals:

- UNKNOWN:
- UNINTERPRETABLE:

9.5.4 OduOamJobType

Contains Enumeration Literals:

- NCM:
- NCM_DELAY:
- TCM:
- TCM_DELAY:

9.5.5 OduPmParameterName

Contains Enumeration Literals:

- BBE:
- SES:
- UAS_BID:
- DELAY:
- FEC_CORRECTED_ERROR:

9.5.6 OduSlotSize

Contains Enumeration Literals:

- 1G25:
- 2G5:

9.5.7 OduType

Contains Enumeration Literals:

- ODU0:
- ODU1:
- ODU2:
- ODU2E:
- ODU3:
- ODU4:
- ODU_FLEX:
- ODU_CN:

9.5.8 OtnAlarmConditionName

Contains Enumeration Literals:

- LOS-P:
 - G.798: Loss of signal information from the media element. Loss of optical signal.
- TIM:
 - G.798: Connectivity supervision/trail trace identifier mismatch.
- BDI-P:
 - G.798: Backward defect indication payload.
- BDI-O:
 - G.798: Backward defect indication overhead.
- BDI:
 - G.798: Backward defect indication.
- OCI:
 - G.798: Open connection indication.
- SSF:
 - Server Signal Fail.
- SSF-P:
 - Server Signal Fail Payload.
- SSF-O:
 - Server Signal Fail Overhead.
- DEG:
 - G.798, G.806: Signal degrade.
- FOP-PM:
 - G.798: ODU linear protection failure of protocol provisioning mismatch.
- FOP-NR:
 - G.798: ODU linear protection failure of protocol no response.
- PLM:
 - Payload mismatch supervision. G.806: The payload label mismatch defect (dPLM) shall be detected if the "accepted TSL" code does not match the "expected TSL" code. If the "accepted TSL" is "equipped non-specific", the mismatch is not detected (TSL: Trail Signal Label). Payload type supervision checks that compatible adaptation functions are used at the source and the sink. This is normally done by adding a signal type identifier at the source adaptation function and comparing it with the expected identifier at the sink. If they do not match, a payload mismatch is detected. G.798 - dPLM at the ODUP layer: dPLM shall be declared if the accepted payload type (AcPT) is not equal to the expected payload type(s) as defined by the specific adaptation function.
- CSF:
 - G.798: Client signal fail.
- MSIM:
 - G.798: Multiplex structure identifier mismatch supervision - tributary port #p
- LOFLOM:
 - G.798: Loss of frame and multiframe - tributary port #p
- LOOMFI:
 - G.798: OPU multiframe (OMFI) reception for OPUk with k = 4
- LSS:
 - G.798, O.151: Loss of PRBS lock.
- LCS:
 - G.798, IEEE 802.3, G.709: Loss of character synchronization.
- LFD:
 - GFP loss of frame delineation. G.806 - Server layer-specific GFP sink processes: GFP loss of frame delineation (dLFD) is raised when the frame delineation process (clause 6.3.1 of [ITU-T G.7041]) is not in the "SYNC" state. dLFD is cleared when the frame delineation process is in the "SYNC" state.
- UPM:
 - GFP user payload mismatch. G.806 - Client-specific GFP-F (Frame) and GFP-T (Transparent) sink processes: GFP user payload mismatch (dUPM) is raised when the

accepted UPI (AcUPI) is different from the expected UPI. dUPM is cleared when AcUPI matches the expected UPI or GFP_SF is active.

- EXM:
 - GFP extension header mismatch. G.806 - Common GFP sink processes: GFP extension header mismatch (dEXM) is raised when the accepted EXI (AcEXI) is different from the expected EXI. dEXM is cleared when AcEXI matches the expected EXI or GFP_SF is active.
- LOF:
 - G.798, G.783: Loss Of Frame.
- RCOHM:
 - G.798: Resize Control Overhead Mismatch.
- GIDM:
 - G.798: Group ID Mismatch.
- FMM:
 - G.798: FlexO/FlexE Map Mismatch.
- LOL:
 - G.798: Loss of lane alignment.
- CSACM:
 - G.798: Calendar Slot Availability Count Mismatch.
- LOM:
 - G.798: Loss of multiframe. Loss of the interleaved FlexESG multi-frame.
- LRC:
 - G.798: Loss of Rate Compensation blocks.
- LTC:
 - G.798: Loss of tandem connection.
- RDI:
 - G.798: Remote Defect Indication.
- LCK:
 - G.798: Locked.
- LOS-O:
 - G.798: Loss of signal overhead.
- LOA:
 - G.798: Loss of alignment.
- LFA:
 - G.798: Loss of FEC word alignment.
- LOS:
 - G.783: Loss Of Signal.

9.5.9 OtnFaultConditionDetermination

ITU-T-REC-G.873.1-201710 Optical transport network: Linear protection

Contains Enumeration Literals:

- NON_INTRUSIVE_CLIENT:
 - Non-intrusive monitoring of Client signal fail
- NON_INTRUSIVE_E2E:
 - Non-intrusive end-to-end monitoring
- NON_INTRUSIVE_SUBLAYER:
 - Non-intrusive Sublayer monitoring

9.5.10 OtuType

Contains Enumeration Literals:

- OTU1:

- OTU2:
- OTU3:
- OTU4:
- OTU_CN:

9.5.11 PercentageGranularity

Contains Enumeration Literals:

- ONES:
- ONE_TENTHS:
 - value * (1/10)
- ONE_HUNDREDTHS:
 - value * (1/100)
- ONE_THOUSANDTHS:
 - value * (1/1000)

9.5.12 StandardFecType

Contains Enumeration Literals:

- REED_SOLOMON:

9.5.13 TcmExtension

Contains Enumeration Literals:

- NORMAL:
- PASS-THROUGH:
- ERASE:

9.5.14 TcmMode

List of value modes for the sink side of the tandem connection monitoring function.

Contains Enumeration Literals:

- OPERATIONAL:
- TRANSPARENT:
- MONITOR:

9.5.15 TcmMonitoring

Monitoring types for the tandem connection monitoring function.

Contains Enumeration Literals:

- INTRUSIVE:
- NON-INTRUSIVE:

9.5.16 TcmStatus

See Table 15-5/G.709/Y.1331

Contains Enumeration Literals:

- NO_SOURCE_TC:

- TCM byte 3 (bits 6 7 8) -- 0 0 0, No source Tandem Connection
- IN_USE_WITHOUT_IAE:
 - TCM byte 3 (bits 6 7 8) -- 0 0 1, In use without IAE (Incoming Alignment Error)
- IN_USE_WITH_IAE:
 - TCM byte 3 (bits 6 7 8) -- 0 1 0, In use with IAE (Incoming Alignment Error)
- RESERVED_1:
 - TCM byte 3 (bits 6 7 8) -- 0 1 1, Reserved for future international standardization
- RESERVED_2:
 - TCM byte 3 (bits 6 7 8) -- 1 0 0, Reserved for future international standardization
- LCK:
 - TCM byte 3 (bits 6 7 8) -- 1 0 1, Maintenance signal: ODU-LCK
- OCI:
 - TCM byte 3 (bits 6 7 8) -- 1 1 0, Maintenance signal: ODU-OCI
- AIS:
 - TCM byte 3 (bits 6 7 8) -- 1 1 1, Maintenance signal: ODU-AIS

9.5.17 TimDetMo

List of modes for trace identifier mismatch detection.

Contains Enumeration Literals:

- DAPI:
- SAPI:
- BOTH:
- OFF:

9.6 Primitives

10 Path Computation Model

TapiPathComputation: This module contains TAPI Path Computation Model definitions. Source: TapiPathComputation.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

10.1 Diagrams

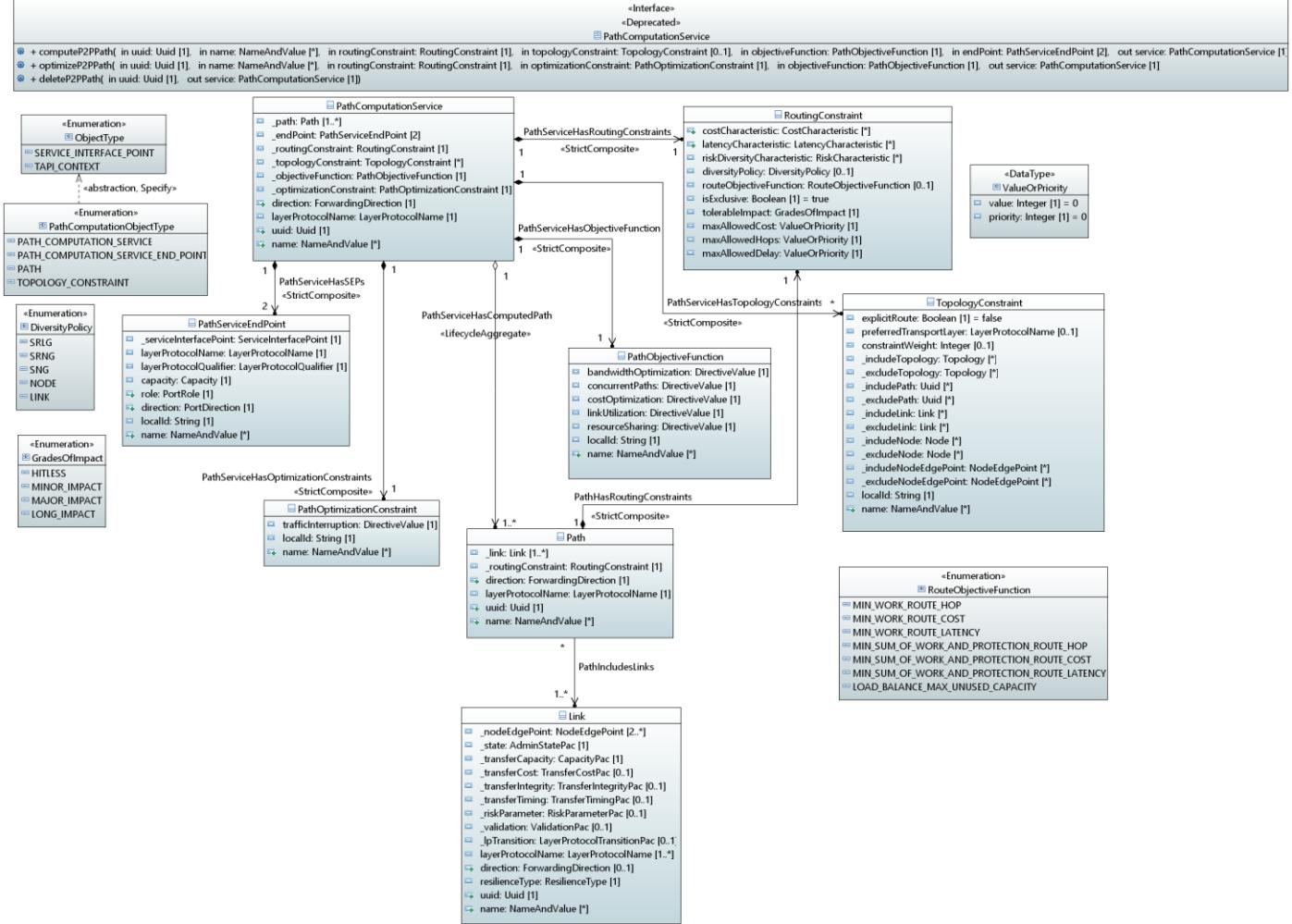


Figure 36 – *PathComputationServiceDetails*

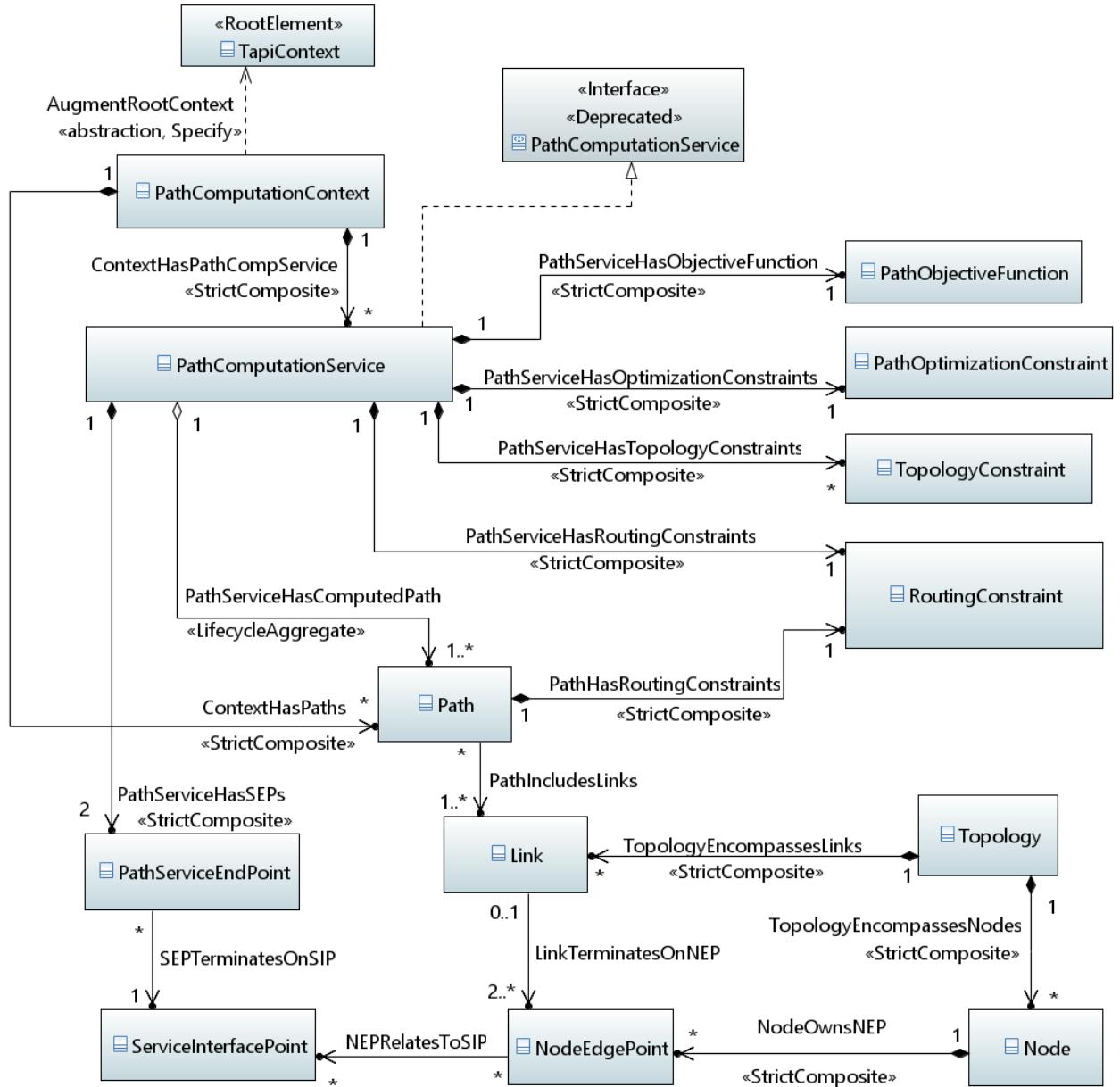


Figure 37 – **PathComputationServiceSkeleton**

10.2 Classes

10.2.1 Path

The Path is described by an ordered list of (TE) Links. A (TE) Link is conceptually defined by a pair of Node/NodeEdgePoint IDs. A Connection is realized by concatenating link resources (associated with a Link) and the lower-level Connections (e.g. cross-connections) in the different Nodes.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_link	Link	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The list of Link instances composing the Path instance.
_routingConstraint	RoutingConstraint	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The associated routing constraints.
direction	ForwardingDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The forwarding direction of the Path.
layerProtocolName	LayerProtocolName	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The layer protocol of the Path.
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

10.2.2 PathComputationContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, specifically regarding the path computation description. An instance of this class includes its PathComputationService and Path object instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_pathCompService	PathComputationService	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The included PathComputationService instances.				
_path	Path	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The included Path instances.				

10.2.3 PathComputationService

A PathComputationService represents an "intent-like" request for connectivity between two or more PathServiceEndPoint (PSEP) instances. The PathComputationService is a container for connectivity request details and is distinct from the Path(s) that realize the request.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_path	Path	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The Path instance(s) tracking the state of the identified resources for the support of the PathComputationService.				

Attribute Name	Type	Mult.	Access	Stereotypes
_endPoint	PathServiceEndPoint	2	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The PathServiceEndPoint (PSEP) instances of the PathComputationService.
_routingConstraint	RoutingConstraint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The associated routing constraints.
_topologyConstraint	TopologyConstraint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The associated topology constraints. Different instances of TopologyConstraints may be used to specify constraints at different layer networks.
_objectiveFunction	PathObjectiveFunction	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The associated objective functions.
_optimizationConstraint	PathOptimizationConstraint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The associated optimization constraints.
direction	ForwardingDirection	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The forwarding direction of the PathComputationService.
layerProtocolName	LayerProtocolName	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: The layer protocol of the PathComputationService.

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

10.2.4 PathObjectiveFunction

The parameters defining the objective functions.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
bandwidthOptimization	DirectiveValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The directive types regarding bandwidth optimization.			
concurrentPaths	DirectiveValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The directive types regarding concurrent paths.			
costOptimization	DirectiveValue	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The directive types regarding cost optimization.			
linkUtilization	DirectiveValue	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The directive types regarding link utilization.			
resourceSharing	DirectiveValue	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The directive types regarding resource sharing.			
localId	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

10.2.5 PathOptimizationConstraint

The parameters defining the optimization constraints.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
trafficInterruption	DirectiveValue	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The directive types regarding traffic interruption.			
localId	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

10.2.6 PathServiceEndPoint

The PathServiceEndPoint (PSEP) encapsulates information related to a PathComputationService at the ingress/egress points of that PathComputationService.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The supporting ServiceInterfacePoint (SIP) instance.			
_serviceInterfacePoint	ServiceInterfacePoint	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The layer protocol of the PathServiceEndPoint (PSEP).			
layerProtocolName	LayerProtocolName	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The layer protocol of the PathServiceEndPoint (PSEP).			
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The layer protocol qualifier of the PathServiceEndPoint (PSEP).			
capacity	Capacity	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The PathServiceEndPoint (PSEP) capacity.			
role	PortRole	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The role of the (conceptual) port of the associated PathComputationService.			
direction	PortDirection	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The orientation of flow at the (conceptual) port of the associated PathComputationService.			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

10.2.7 RoutingConstraint

The parameters of the routing constraints.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
costCharacteristic	CostCharacteristic	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The list of costs where each cost relates to some aspect of a topological entity.			
latencyCharacteristic	LatencyCharacteristic	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The effect on the latency of a queuing process. This only has significant effect for packet based systems and has a complex characteristic.			
riskDiversityCharacteristic	RiskCharacteristic	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The diversity risk characteristics.			
diversityPolicy	DiversityPolicy	0..1	RW	
	Description:			
	The diversity policies.			
routeObjectiveFunction	RouteObjectiveFunction	0..1	RW	
	Description:			
	The route objective functions.			
isExclusive	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	To distinguish if the resources are to be exclusive to the service.			
tolerableImpact	GradesOfImpact	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	Grades of maximum tolerable disruption to traffic.			
maxAllowedCost	ValueOrPriority	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	The specification of the maximum allowed cost.			

Attribute Name	Type	Mult.	Access	Stereotypes
maxAllowedHops	ValueOrPriority	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The specification of the maximum allowed hops.				
maxAllowedDelay	ValueOrPriority	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The specification of the maximum allowed delay, value in microseconds.				

10.2.8 TopologyConstraint

The TopologyConstraint class allows to specify topology entities in order to impose specific constraints (as denoted by the attribute name) on ConnectivityService/PathComputationService realization. The topology entities are specified by their instance UUID rather than using references/path (to allow for mapping to Yang 1.0). This loose typing and reference necessitates that implementations validate not only the presence of the instance, but also that it is of the correct type as implied by the attribute name. If this validation fails, then the implementation is expected to return an error.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
explicitRoute	Boolean	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
If true, indicates that the route constraints are specified with full detail, i.e. no need for further route computation.				
preferredTransportLayer	LayerProtocolName	0..1	RW	
Description:				
Soft constraint requested by client to indicate the layer of transport connection that it prefers to carry the service. This could be same as the service layer or one of the supported server layers.				
constraintWeight	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Zero and positive values: zero means "strongly required to be included", +1 means "less strongly required to be included", etc. For example the work/intended route will be calculated considering the topologies which weights are lowest (but not negative). Negative values: -1 means "strongly required to be excluded", -2 means "less strongly required to be excluded", etc.			
_includeTopology	Topology	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Topology instance to be included in the connectivity route.			
_excludeTopology	Topology	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Topology instance to be excluded from the connectivity route.			
_includePath	Uuid	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Path instance to be followed by the connectivity route. The type is generic UUID given read/write constraints, the Path is a readonly node.			
_excludePath	Uuid	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Path instance to be excluded from the connectivity route. The type is generic UUID given read/write constraints, the Path is a readonly node.			
_includeLink	Link	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Link instance to be included in the connectivity route.			
_excludeLink	Link	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Link instance to be excluded from the connectivity route.			

Attribute Name	Type	Mult.	Access	Stereotypes
_includeNode	Node	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The Node instance to be included in the connectivity route.				
_excludeNode	Node	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The Node instance to be excluded from the connectivity route.				
_includeNodeEdgePoint	NodeEdgePoint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The NodeEdgePoint (NEP) instance to be included in the connectivity route.				
_excludeNodeEdgePoint	NodeEdgePoint	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The NodeEdgePoint (NEP) instance to be excluded from the connectivity route.				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

10.3 Associations

10.3.1 ContextHasPathCompService

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_pathCompService	composite	Yes	PathComputationService	0..*
pathcomputationcontext	none	No	PathComputationContext	1

10.3.2 ContextHasPaths

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_path	composite	Yes	Path	0..*
pathcomputationcontext	none	No	PathComputationContext	1

10.3.3 PathHasRoutingConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_routingConstraint	composite	Yes	RoutingConstraint	1
_path	none	No	Path	1

10.3.4 PathIncludesLinks

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_link	none	Yes	Link	1..*
_path	none	No	Path	0..*

10.3.5 PathServiceHasComputedPath

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_path	shared	Yes	Path	1..*
_pathService	none	No	PathComputationService	1

10.3.6 PathServiceHasObjectiveFunction

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_objectiveFunction	composite	Yes	PathObjectiveFunction	1
_path	none	No	PathComputationService	1

10.3.7 PathServiceHasOptimizationConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_optimizationConstraint	composite	Yes	PathOptimizationConstraint	1
_path	none	No	PathComputationService	1

10.3.8 PathServiceHasRoutingConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_routingConstraint	composite	Yes	RoutingConstraint	1
_pathService	none	No	PathComputationService	1

10.3.9 PathServiceHasSEPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_endPoint	composite	Yes	PathServiceEndPoint	1
_service	none	No	PathComputationService	1

10.3.10 PathServiceHasTopologyConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topologyConstraint	composite	Yes	TopologyConstraint	0..*
_pathcomputationservice	none	No	PathComputationService	1

10.3.11 SEPTerminatesOnSIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serviceInterfacePoint	none	Yes	ServiceInterfacePoint	1
_pathServicePort	none	No	PathServiceEndPoint	0..*

10.4 Data Types

10.4.1 ValueOrPriority

Quantitative target: when a value is specified it is intended as mandatory for fulfilment. If value is specified, priority is not considered. Qualitative target: when priority is specified. Zero means "unspecified", 1 is highest priority, then 2 has lower priority than 1, 3 has lower priority than 2, etc.

Attribute Name	Type	Mult.	Access	Stereotypes
value	Integer	1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Description:

The specified value.

Attribute Name	Type	Mult.	Access	Stereotypes
priority	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

10.5 Enumerations

10.5.1 DiversityPolicy

The types of routing diversity policies.

Contains Enumeration Literals:

- SRLG:
 - Shared Risk Link Group.
- SRNG:
 - Shared Risk Node Group.
- SNG:
 - Shared Node Group.
- NODE:
 - Diversity with respect to involved Node instances.
- LINK:
 - Diversity with respect to involved Link instances.

10.5.2 GradesOfImpact

The grades of impact on traffic.

Contains Enumeration Literals:

- HITLESS:
 - No impact on traffic.
- MINOR_IMPACT:
 - Impact less or equal to 50ms.
- MAJOR_IMPACT:
 - Impact order of magnitude: several seconds to minutes.
- LONG_IMPACT:
 - Impact order of magnitude: several minutes to hours.

10.5.3 PathComputationObjectType

The list of TAPI Path Computation Global Object Class types on which Notification signals can be raised.

Contains Enumeration Literals:

- PATH_COMPUTATION_SERVICE:
 - The PathComputationService class.
- PATH_COMPUTATION_SERVICE_END_POINT:
 - The PathServiceEndPoint (PSEP) class.
- PATH:
 - The Path class.

- TOPOLOGY_CONSTRAINT:
 - The TopologyConstraint class.

10.5.4 RouteObjectiveFunction

The types of route objective function.

Contains Enumeration Literals:

- MIN_WORK_ROUTE_HOP:
 - Minimize the number of hops in the working/preferred/intended route.
- MIN_WORK_ROUTE_COST:
 - Minimize the routing cost in the working/preferred/intended route.
- MIN_WORK_ROUTE_LATENCY:
 - Minimize the latency in the working/preferred/intended route.
- MIN_SUM_OF_WORK_AND_PROTECTION_ROUTE_HOP:
 - Minimize the total number of hops of the working/preferred/intended and spare/protection routes.
- MIN_SUM_OF_WORK_AND_PROTECTION_ROUTE_COST:
 - Minimize the total cost of the working/preferred/intended and spare/protection routes.
- MIN_SUM_OF_WORK_AND_PROTECTION_ROUTE_LATENCY:
 - Minimize the total latency of the working/preferred/intended and spare/protection routes.
- LOAD_BALANCE_MAX_UNUSED_CAPACITY:
 - Balance the unused capacity of the working/preferred/intended and spare/protection routes.

10.6 Primitives

11 Photonic Media Model

TapiPhotonicMedia: This module contains TAPI Photonic Media Model definitions. Source: TapiPhotonicMedia.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

11.1 Diagrams

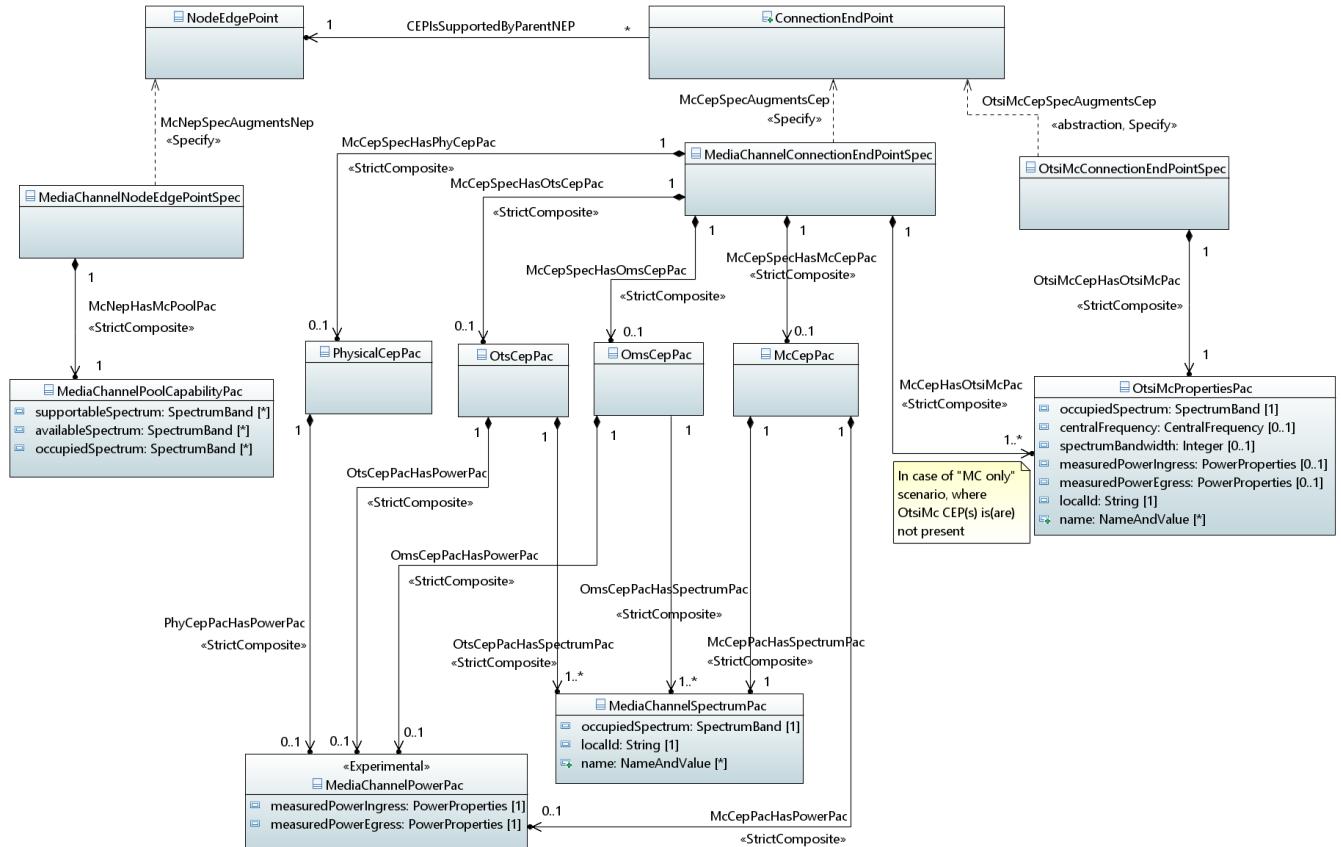


Figure 38 – **McResourceSpec**

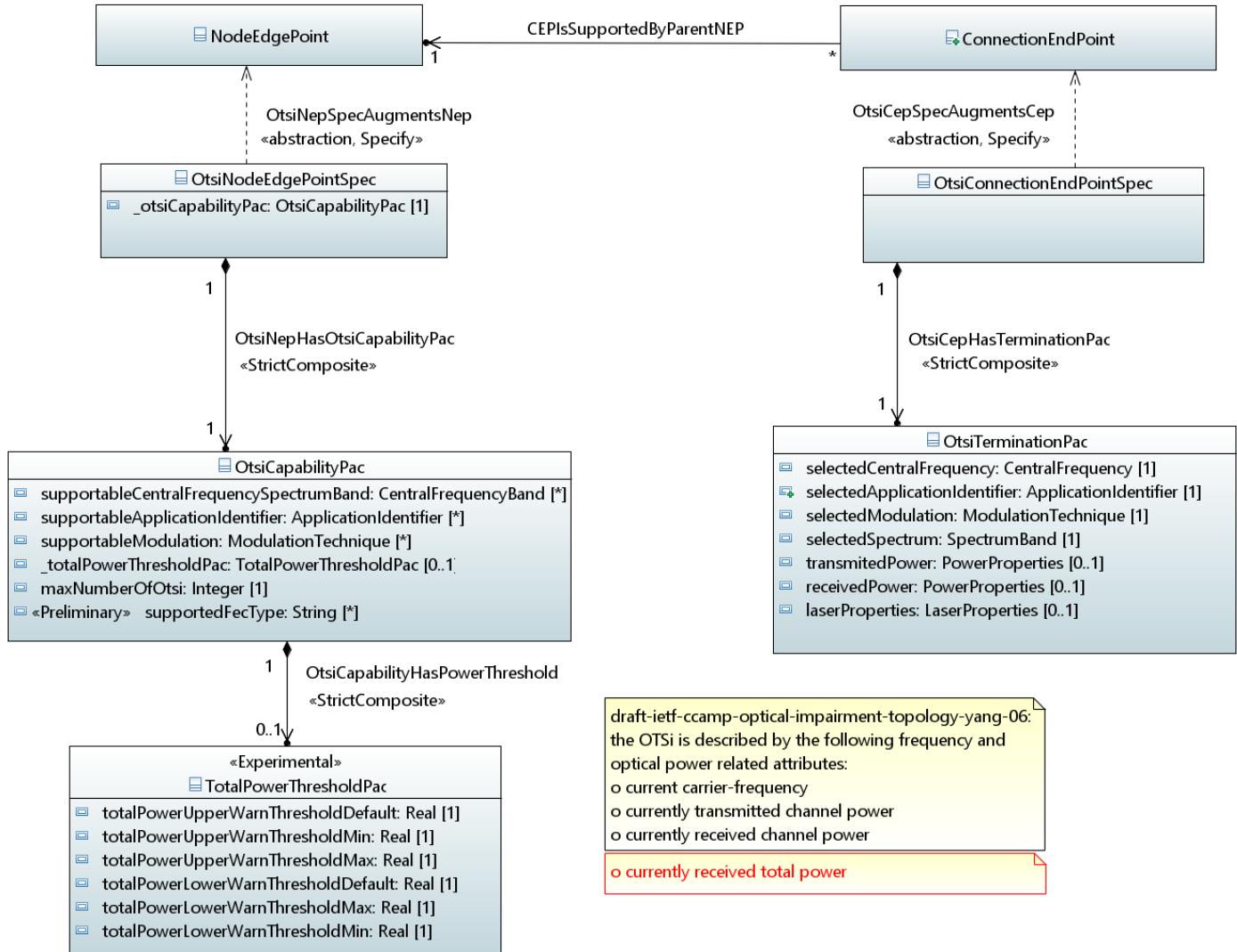


Figure 39 – OtsiResourceSpec

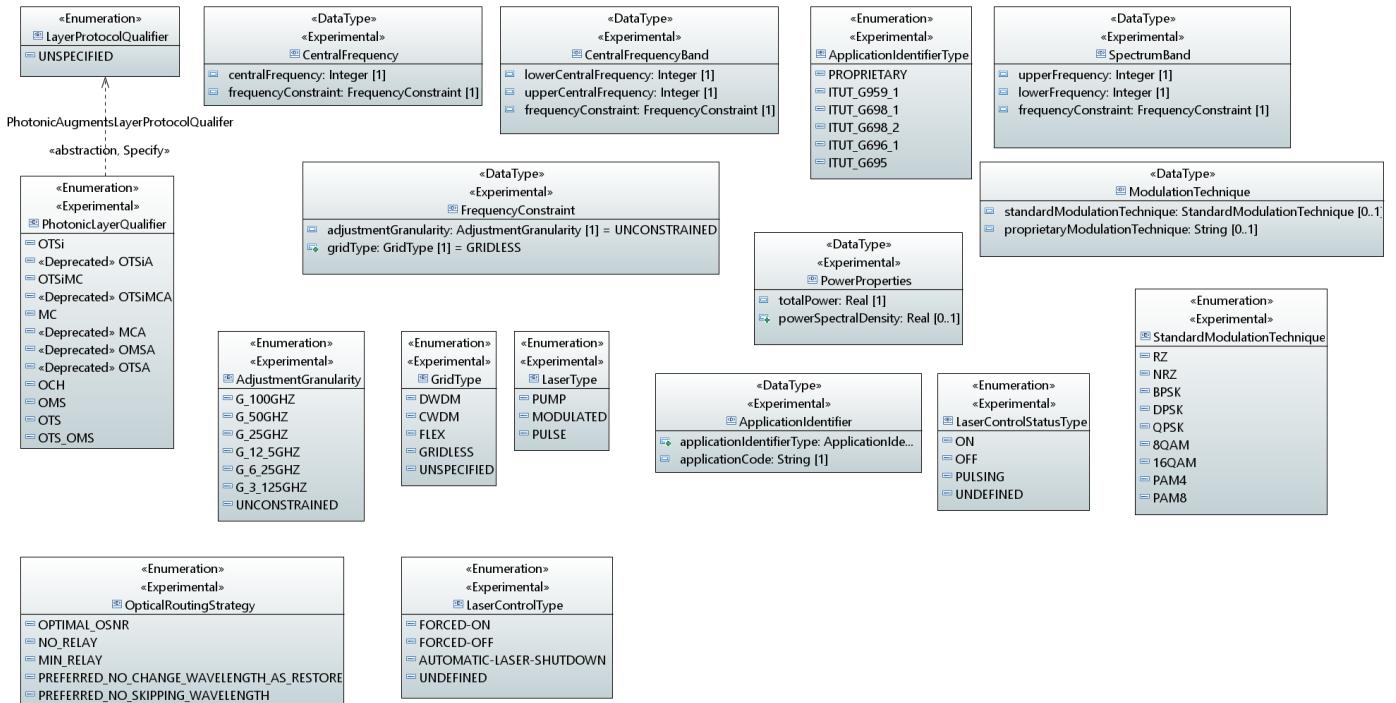


Figure 40 – PhotonicTypes

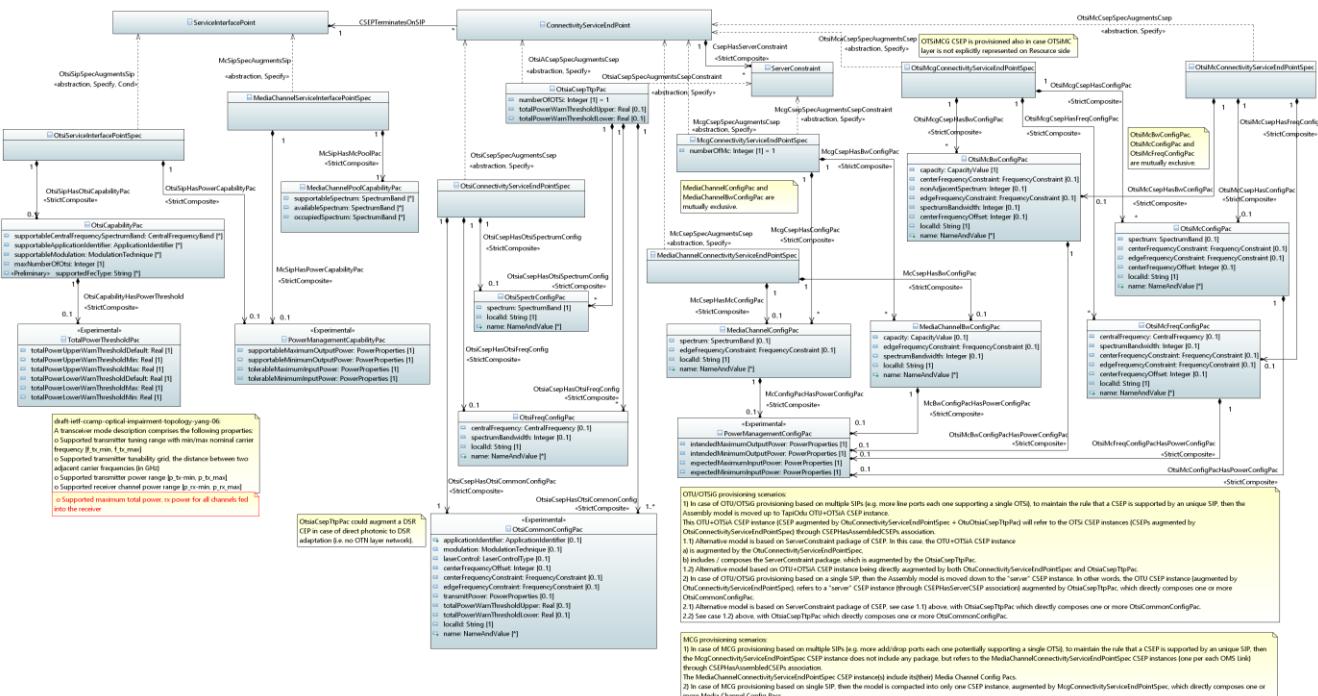


Figure 41 – ServiceSpec

11.2 Classes

11.2.1 McCepPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
 - OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelSpectrumPac	MediaChannelSpectrumPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
_mediaChannelPowerPac	MediaChannelPowerPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

11.2.2 McgConnectivityServiceEndPointSpec

MCG provisioning scenarios: 1) In case of MCG provisioning based on multiple SIPs (e.g. more add/drop ports each one potentially supporting a single OTSi), to maintain the rule that a CSEP is supported by an unique SIP, then the McgConnectivityServiceEndPointSpec CSEP instance does not include any package, but refers to the MediaChannelConnectivityServiceEndPointSpec CSEP instances (one per each OMS Link) through the CSEPHasAssembledCSEPs association. The MediaChannelConnectivityServiceEndPointSpec CSEP instance(s) include its(their) Media Channel Config Pacs. 2) In case of MCG provisioning based on single SIP, then the model is compacted into only one CSEP instance, augmented by McgConnectivityServiceEndPointSpec, which directly composes one or more Media Channel Config Pacs. MediaChannelConfigPac and MediaChannelBwConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
numberOfMc	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
_mediaChannelConfigPac	MediaChannelConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
_mediaChannelBwConfigPac	MediaChannelBwConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

11.2.3 MediaChannelBwConfigPac

MediaChannelConfigPac and MediaChannelBwConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
capacity	CapacityValue	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
spectrumBandwidth	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	Unidimensional in MHz			
_powerManagementConfigPac	PowerManagementConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.4 MediaChannelConfigPac

MediaChannelConfigPac and MediaChannelBwConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
spectrum	SpectrumBand	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
_powerManagementConfigPac	PowerManagementConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.5 MediaChannelConnectionEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiMcPropertiesPac	OtsiMcPropertiesPac	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
In case of "MC only" scenario, where OtsiMc CEP(s) is(are) not present.				
_mcCepPac	McCepPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_omsCepPac	OmsCepPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_otsCepPac	OtsCepPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
_physicalCepPac	PhysicalCepPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				

11.2.6 MediaChannelConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelConfigPac	MediaChannelConfigPac	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
_mediaChannelBwConfigPac	MediaChannelBwConfigPac	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

11.2.7 MediaChannelNodeEdgePointSpec

Applied stereotypes:

- OpenModelClass
 - support: CONDITIONAL_MANDATORY
 - condition: OTSiA
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelPoolCapabilityPac	MediaChannelPoolCapabilityPac	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

11.2.8 MediaChannelPoolCapabilityPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
supportableSpectrum	SpectrumBand	0..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
availableSpectrum	SpectrumBand	0..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
occupiedSpectrum	SpectrumBand	0..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

11.2.9 MediaChannelPowerPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
measuredPowerIngress	PowerProperties	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
measuredPowerEgress	PowerProperties	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

11.2.10 MediaChannelServiceInterfacePointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY

- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelPoolCapabilityPac	MediaChannelPoolCapabilityPac	1	R	OpenModelAttribute <ul style="list-style-type: none"> ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY ◦ OpenInterfaceModelAttribute ◦ AVC: NA
Description:				
_powerManagementCapabilityPac	PowerManagementCapabilityPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY ◦ OpenInterfaceModelAttribute ◦ AVC: NA
Description:				

11.2.11 MediaChannelSpectrumPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
occupiedSpectrum	SpectrumBand	1	R	OpenModelAttribute <ul style="list-style-type: none"> ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY ◦ OpenInterfaceModelAttribute ◦ AVC: NA
Description:				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> ◦ isKey: yes – part: 1 ◦ isInvariant: true ◦ valueRange: no range constraint ◦ support: MANDATORY ◦ OpenInterfaceModelAttribute ◦ AVC: NA
Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> ◦ isKey: No ◦ isInvariant: false ◦ valueRange: no range constraint ◦ support: MANDATORY ◦ OpenInterfaceModelAttribute ◦ AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.</p>				

11.2.12 OmsCepPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelSpectrumPac	MediaChannelSpectrumPac	1..*	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
Description:				
_mediaChannelPowerPac	MediaChannelPowerPac	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
Description:				

11.2.13 OtsCepPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelPowerPac	MediaChannelPowerPac	0..1	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelSpectrumPac	MediaChannelSpectrumPac	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

11.2.14 OtsiCapabilityPac

Can read the status of the warning for the upper value that the power can reach.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
supportableCentralFrequencySpectrumBand	CentralFrequencyBand	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: • support: MANDATORY • AVC: NA
	Description:			
	Each spectrum band supported for otsi transmitter to be tuned on, is specified as per it's lower and upper central frequencies supported and its frequency constraints, consisting in the frequency Grid and the AdjustmentGranularity, used to uniquely identify all central frequencies supported within the band.			
supportableApplicationIdentifier	ApplicationIdentifier	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: 255 • support: MANDATORY • AVC: YES
	Description:			
	The list of supportable ApplicationIdentifiers.			
supportableModulation	ModulationTechnique	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: • support: MANDATORY • AVC: YES
	Description:			
	This parameter defines the modulation used at the source.			
_totalPowerThresholdPac	TotalPowerThresholdPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes
maxNumberOfOtsi	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
supportedFecType	String	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY Preliminary OpenInterfaceModelAttribute • AVC: NA
Description:				
Experimental - this is a capability related to OTU client layer.				

11.2.15 OtsiCommonConfigPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
applicationIdentifier	ApplicationIdentifier	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: null • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
Description:				
This attribute indicates the selected Application Identifier.				
modulation	ModulationTechnique	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
Description:				
The modulation technique selected at the source.				
laserControl	LaserControlType	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
Description:				
Laser control can be FORCED-ON, FORCED-OFF or LASER-SHUTDOWN				

Attribute Name	Type	Mult.	Access	Stereotypes
centerFrequencyOffset	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Offset where it is expected to find the signal in the MC. (unidimensional in MHz).				
centerFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
transmitPower	PowerProperties	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: YES
Description:				
Transmit power as requested.				
totalPowerWarnThresholdUpper	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NO
Description:				
Allows to configure the upper power threshold which is expected to be different from Default, but within the Min and Max values specified as OTSi SIP capability.				
totalPowerWarnThresholdLower	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NO
Description:				
Allows to configure the lower power threshold which is expected to be different from Default, but within the Min and Max values specified as OTSi SIP capability.				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				

Attribute Name	Type	Mult.	Access	Stereotypes
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

11.2.16 OtsiConnectionEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: CONDITIONAL_MANDATORY
 - condition: OTSiA
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiTerminationPac	OtsiTerminationPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

11.2.17 OtsiConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiCommonConfigPac	OtsiCommonConfigPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiSpectrConfigPac	OtsiSpectrConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_otsiFreqConfigPac	OtsiFreqConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

11.2.18 OtsiFreqConfigPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
centralFrequency	CentralFrequency	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave				
spectrumBandwidth	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Unidimensional in MHz				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				

Attribute Name	Type	Mult.	Access	Stereotypes
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.19 OtsiMcBwConfigPac

OtsiMcBwConfigPac, OtsiMcConfigPac and OtsiMcFreqConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
capacity	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
centerFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
nonAdjacentSpectrum	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes
spectrumBandwidth	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Unidimensional in MHz				
centerFrequencyOffset	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Offset where it is expected to find the signal in the MC. (unidimensional in MHz).				
_powerManagementConfigPac	PowerManagementConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

11.2.20 OtsiMcConfigPac

OtsiMcBwConfigPac, OtsiMcConfigPac and OtsiMcFreqConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
spectrum	SpectrumBand	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
centerFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
centerFrequencyOffset	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Offset where it is expected to find the signal in the MC. (unidimensional in MHz).			
_powerManagementConfigPac	PowerManagementConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.21 OtsiMcConnectionEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiMcPropertiesPac	OtsiMcPropertiesPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

11.2.22 OtsiMcConnectivityServiceEndPointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiMcConfigPac	OtsiMcConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
_otsiMcBwConfigPac	OtsiMcBwConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
_otsiMcFreqConfigPac	OtsiMcFreqConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

11.2.23 OtsiMcFreqConfigPac

OtsiMcBwConfigPac, OtsiMcConfigPac and OtsiMcFreqConfigPac are mutually exclusive.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
centralFrequency	CentralFrequency	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave				
spectrumBandwidth	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Unidimensional in MHz				
centerFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
edgeFrequencyConstraint	FrequencyConstraint	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
centerFrequencyOffset	Integer	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Offset where it is expected to find the signal in the MC. (unidimensional in MHz).				
_powerManagementConfigPac	PowerManagementConfigPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
localId	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.24 OtsiMcPropertiesPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
occupiedSpectrum	SpectrumBand	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
centralFrequency	CentralFrequency	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave			
spectrumBandwidth	Integer	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Unidimensional in MHz			

Attribute Name	Type	Mult.	Access	Stereotypes
measuredPowerIngress	PowerProperties	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
measuredPowerEgress	PowerProperties	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			
	List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

11.2.25 OtsiMcgConnectivityServiceEndPointSpec

OTSiMCG CSEP is provisioned also in case OTSiMC layer is not explicitly represented on Resource side, i.e. no OTSiMC Connections and CEPs are instantiated. OTSiMCG provisioning scenarios: analogous to McgConnectivityServiceEndPointSpec provisioning scenarios.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiMcBwConfigPac	OtsiMcBwConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiMcConfigPac	OtsiMcConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
_otsiMcFreqConfigPac	OtsiMcFreqConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

11.2.26 OtsiNodeEdgePointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiCapabilityPac	OtsiCapabilityPac	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				

11.2.27 OtsiRoutingSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
opticalRoutingStrategy	OpticalRoutingStrategy	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

11.2.28 OtsiServiceInterfacePointSpec

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiCapabilityPac	OtsiCapabilityPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
_powerManagementCapabilityPac	PowerManagementCapabilityPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				

11.2.29 OtsiSpectrConfigPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
spectrum	SpectrumBand	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				

Attribute Name	Type	Mult.	Access	Stereotypes
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

11.2.30 OtsiTerminationPac

Provides status information only.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
selectedCentralFrequency	CentralFrequency	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: YES
Description:				
selectedApplicationIdentifier	ApplicationIdentifier	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
This attribute indicates the selected Application Identifier that is used by the OCh trail termination function. The syntax of ApplicationIdentifier is a pair {ApplicationIdentifierType, PrintableString}. The value of ApplicationIdentifierType is either STANDARD or PROPRIETARY. The value of PrintableString represents the standard application code as defined in the ITU-T Recommendations or a vendor-specific proprietary code. If the ApplicationIdentifierType is STANDARD the value of PrintableString represents a standard application code as defined in the ITU-T Recommendations. If the ApplicationIdentifierType is PROPRIETARY, the first six characters of the PrintableString must contain the Hexadecimal representation of an OUI assigned to the vendor whose implementation generated the Application Identifier; the remaining octets of the PrintableString are unspecified. The value of this attribute of an object instance has to be one of the values identified in the attribute SupportableApplicationIdentifierList of the same object instance. The values and value ranges of the optical interface parameters of a standard application code must be consistent with those values specified in the ITU-T Recommendation for that application code.				

Attribute Name	Type	Mult.	Access	Stereotypes
selectedModulation	ModulationTechnique	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: YES
	Description:			
	This parameter defines the modulation used at the source.			
selectedSpectrum	SpectrumBand	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
transmitedPower	PowerProperties	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	Measured power at the Transmitter.			
receivedPower	PowerProperties	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
laserProperties	LaserProperties	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			
	Laser properties.			

11.2.31 OtsiaCsepTtpPac

OTU/OTSiG provisioning scenarios: 1) In case of OTU/OTSiG provisioning based on multiple SIPs (e.g. more line ports each one supporting a single OTSi), to maintain the rule that a CSEP is supported by an unique SIP, then the Assembly model is moved up to TapiOdu OTU+OTSiA CSEP instance. This OTU+OTSiA CSEP instance (CSEP augmented by OtuConnectivityServiceEndPointSpec + OtsiaCsepTtpPac) will refer to the OTSi CSEP instances (CSEPs augmented by OtsiConnectivityServiceEndPointSpec) through CSEPHasAssembledCSEPs association. 1.1) Alternative model is based on ServerConstraint package of CSEP. In this case, the OTU+OTSiA CSEP instance a) is augmented by the OtuConnectivityServiceEndPointSpec, b) includes / composes the ServerConstraint package, which is augmented by the OtsiaCsepTtpPac. 1.2) Alternative model based on OTU+OTSiA CSEP instance being directly augmented by both OtuConnectivityServiceEndPointSpec and OtsiaCsepTtpPac. 2) In case of OTU/OTSiG provisioning based on a single SIP, then the Assembly model is moved down to the "server" CSEP instance. In other words, the OTU CSEP instance (augmented by OtuConnectivityServiceEndPointSpec), refers to a "server" CSEP instance (through CSEPHasServerCSEP

association) augmented by OtsiaCsepTtpPac, which directly composes one or more OtsiCommonConfigPac. 2.1) Alternative model is based on ServerConstraint package of CSEP, see case 1.1) above, with OtsiaCsepTtpPac which directly composes one or more OtsiCommonConfigPac. 2.2) See case 1.2) above, with OtsiaCsepTtpPac which directly composes one or more OtsiCommonConfigPac.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_otsiCommonConfigPac	OtsiCommonConfigPac	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
_otsiSpectrConfigPac	OtsiSpectrConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
_otsiFreqConfigPac	OtsiFreqConfigPac	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
numberOfOTSi	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
totalPowerWarnThresholdUpper	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
	Allows to configure the upper power threshold on whole Assembly scope.			

Attribute Name	Type	Mult.	Access	Stereotypes
totalPowerWarnThresholdLower	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA Description: Allows to configure the lower power threshold on whole Assembly scope.

11.2.32 PhysicalCepPac

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_mediaChannelPowerPac	MediaChannelPowerPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA Description:

11.2.33 PowerManagementCapabilityPac

This pac includes power management capabilities which can be exposed as part of the characterization of the different LTPs at the PHOTONIC_MEDIA layer.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
supportableMaximumOutputPower	PowerProperties	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA Description: This parameter exposes the maximum output power supported at the Logical-Termination-Point (LTP) associated to the SIP.

Attribute Name	Type	Mult.	Access	Stereotypes
supportableMinimumOutputPower	PowerProperties	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter exposes the minimum output power supported at the Logical-Termination-Point (LTP) associated to the SIP.			
tolerableMaximumInputPower	PowerProperties	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter exposes the maximum input power tolerated at the Logical-Termination-Point (LTP) associated to the SIP.			
tolerableMinimumInputPower	PowerProperties	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter exposes the minimum input power tolerated at the Logical-Termination-Point (LTP) associated to the SIP.			

11.2.34 PowerManagementConfigPac

This pac includes power management constraints which can be included as part of the characterization of the CSEPs associated to CEPs at the PHOTONIC_MEDIA layer.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
intendedMaximumOutputPower	PowerProperties	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter shall be used to specify the maximum intended power to be delivered to the local transceiver i.e., after the signal has crossed the amplification/attenuation of the optical line system. This specifies constraints related to power that the OLS should guarantee.			

Attribute Name	Type	Mult.	Access	Stereotypes
intendedMinimumOutputPower	PowerProperties	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter shall be used to specify the minimum intended power to be delivered to the local transceiver i.e., after the signal has crossed the amplification/attenuation of the optical line system. This specifies constraints related to power that the OLS should guarantee.			
expectedMaximumInputPower	PowerProperties	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter conveys the attached transceiver max launch (TX) power (expected from the transceiver). This specifies constraints related to power tolerance at the input.			
expectedMinimumInputPower	PowerProperties	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: This parameter conveys the attached transceiver min launch (TX) power (expected from the transceiver). This specifies constraints related to power tolerance at the input.			

11.2.35 TotalPowerThresholdPac

Indication with severity warning raised when a total power value measured is above the threshold.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- Experimental
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
totalPowerUpperWarnThresholdDefault	Real	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: YES
	Description: Can read the value of the default threshold that was set			
totalPowerUpperWarnThresholdMin	Real	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Can read the value of the lower threshold that was set			
totalPowerUpperWarnThresholdMax	Real	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Can read the value of the upper threshold that was set			
totalPowerLowerWarnThresholdDefault	Real	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
	Description: Can read the value of the default threshold that was set			
totalPowerLowerWarnThresholdMax	Real	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Can read the value of the upper threshold that was set			
totalPowerLowerWarnThresholdMin	Real	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Can read the value of the lower threshold that was set			

11.3 Associations

11.3.1 McBwConfigPacHasPowerConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementConfigPac	composite	Yes	PowerManagementConfigPac	0..1
mediachannelbwconfigpac	none	No	MediaChannelBwConfigPac	1

11.3.2 McCepHasOtsiMcPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcPropertiesPac	composite	Yes	OtsiMcPropertiesPac	1..*
mediachannelconnectionendpointspec	none	No	MediaChannelConnectionEndPointSpec	1

11.3.3 McCepPacHasPowerPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mediaChannelPowerPac	composite	Yes	MediaChannelPowerPac	0..1
mcceppac	none	No	McCepPac	1

11.3.4 McCepPacHasSpectrumPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mediaChannelSpectrumPac	composite	Yes	MediaChannelSpectrumPac	1
mcceppac	none	No	McCepPac	1

11.3.5 McCepSpecHasMcCepPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mcCepPac	composite	Yes	McCepPac	0..1
mediachannelconnectionendpointspec	none	No	MediaChannelConnectionEndPointSpec	1

11.3.6 McCepSpecHasOmsCepPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_omsCepPac	composite	Yes	OmsCepPac	0..1
mediachannelconnectionendpointspec	none	No	MediaChannelConnectionEndPointSpec	1

11.3.7 McCepSpecHasOtsCepPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsCepPac	composite	Yes	OtsCepPac	0..1
mediachannelconnectionendpointspec	none	No	MediaChannelConnectionEndPointSpec	1

11.3.8 McCepSpecHasPhyCepPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_physicalCepPac	composite	Yes	PhysicalCepPac	0..1
mediachannelconnectionendpointspec	none	No	MediaChannelConnectionEndPointSpec	1

11.3.9 McConfigPacHasPowerConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementConfigPac	composite	Yes	PowerManagementConfigPac	0..1
mediachannelconfigpac	none	No	MediaChannelConfigPac	1

11.3.10 McCsepHasBwConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelBwConfigPac	composite	Yes	MediaChannelBwConfigPac	0..1
mediachannelconnectivityserviceendpointspec	none	No	MediaChannelConnectivityServiceEndPointSpec	1

11.3.11 McCsepHasMcConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelConfigPac	composite	Yes	MediaChannelConfigPac	0..1
olsconnectivityserviceendpoint	none	No	MediaChannelConnectivityServiceEndPointSpec	1

11.3.12 McCtpHasEgressPower

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
measuredPowerEgress	composite	Yes	PowerProperties	1
mediachannelpropertiespac	none	No	MediaChannelPowerPac	1

11.3.13 McCtpHasIngressPower

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
measuredPowerIngress	composite	Yes	PowerProperties	1
mediachannelctppac	none	No	MediaChannelPowerPac	1

11.3.14 McNepHasMcPoolPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelPoolCapabilityPac	composite	Yes	MediaChannelPoolCapabilityPac	1
lpSpec	none	No	MediaChannelNodeEdgePointSpec	1

11.3.15 McSipHasMcPoolPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelPoolCapabilityPac	composite	Yes	MediaChannelPoolCapabilityPac	1
smcserviceinterfacepoint	none	No	MediaChannelServiceInterfacePointSpec	1

11.3.16 McSipHasPowerCapabilityPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
powerManagementCapabilityPac	composite	Yes	PowerManagementCapabilityPac	0..1
mediachannelpoolcapabilitypac	none	No	MediaChannelServiceInterfacePointSpec	1

11.3.17 McgCsepHasBwConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelBwConfigPac	composite	Yes	MediaChannelBwConfigPac	0..*
mcaconnectivityserviceendpointspec	none	No	McgConnectivityServiceEndPointSpec	1

11.3.18 McgCsepHasConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelConfigPac	composite	Yes	MediaChannelConfigPac	0..*
mcaconnectivityserviceendpointspec	none	No	McgConnectivityServiceEndPointSpec	1

11.3.19 OmsCepPacHasPowerPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelPowerPac	composite	Yes	MediaChannelPowerPac	0..1
omsceppac	none	No	OmsCepPac	1

11.3.20 OmsCepPacHasSpectrumPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
mediaChannelSpectrumPac	none	Yes	MediaChannelSpectrumPac	1..*
omsceppac	none	No	OmsCepPac	1

11.3.21 OtsCepPacHasPowerPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mediaChannelPowerPac	composite	Yes	MediaChannelPowerPac	0..1
otscepac	none	No	OtsCepPac	1

11.3.22 OtsCepPacHasSpectrumPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mediaChannelSpectrumPac	composite	Yes	MediaChannelSpectrumPac	1..*
otsceppac	none	No	OtsCepPac	1

11.3.23 OtsiCapabilityHasPowerThreshold

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_totalPowerThresholdPac	composite	Yes	TotalPowerThresholdPac	0..1
otsicapabilitypac	none	No	OtsiCapabilityPac	1

11.3.24 OtsiCepHasTerminationPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiTerminationPac	composite	Yes	OtsiTerminationPac	1
otsiconnectionendpointspec	none	No	OtsiConnectionEndPointSpec	1

11.3.25 OtsiConfigHasPowerProperties

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
transmitPower	composite	Yes	PowerProperties	0..1
otsiconfigpac	none	No	OtsiCommonConfigPac	1

11.3.26 OtsiCsepHasOtsiCommonConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiCommonConfigPac	composite	Yes	OtsiCommonConfigPac	1
otsiaconnectivityserviceendpointspec	none	No	OtsiConnectivityServiceEndPointSpec	1

11.3.27 OtsiCsepHasOtsiFreqConfig

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiFreqConfigPac	composite	Yes	OtsiFreqConfigPac	0..1
otsiconnectivityserviceendpointspec	none	No	OtsiConnectivityServiceEndPointSpec	1

11.3.28 OtsiCsepHasOtsiSpectrumConfig

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiSpectrConfigPac	composite	Yes	OtsiSpectrConfigPac	0..1
otsiconnectivityserviceendpointspec	none	No	OtsiConnectivityServiceEndPointSpec	1

11.3.29 OtsiMcBwConfigPacHasPowerConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementConfigPac	composite	Yes	PowerManagementConfigPac	0..1
otsimcbwconfigpac	none	No	OtsiMcBwConfigPac	1

11.3.30 OtsiMcCepHasOtsiMcPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcPropertiesPac	composite	Yes	OtsiMcPropertiesPac	1
otsimccnectionendpointspec	none	No	OtsiMcConnectionEndPointSpec	1

11.3.31 OtsiMcConfigPacHasPowerConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementConfigPac	composite	Yes	PowerManagementConfigPac	0..1
otsimccconfigpac	none	No	OtsiMcConfigPac	1

11.3.32 OtsiMcCsepHasBwConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcBwConfigPac	composite	Yes	OtsiMcBwConfigPac	0..1
otsimccnectivityserviceendpointspec	none	No	OtsiMcConnectivityServiceEndPointSpec	1

11.3.33 OtsiMcCsepHasConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcConfigPac	composite	Yes	OtsiMcConfigPac	0..1
otsimcconnectivityserviceendpointspec	none	No	OtsiMcConnectivityServiceEndPointSpec	1

11.3.34 OtsiMcCsepHasFreqConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcFreqConfigPac	composite	Yes	OtsiMcFreqConfigPac	0..1
otsimcconnectivityserviceendpointspec	none	No	OtsiMcConnectivityServiceEndPointSpec	1

11.3.35 OtsiMcFreqConfigPacHasPowerConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementConfigPac	composite	Yes	PowerManagementConfigPac	0..1
otsimcfreqconfigpac	none	No	OtsiMcFreqConfigPac	1

11.3.36 OtsiMcgCsepHasBwConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcBwConfigPac	composite	Yes	OtsiMcBwConfigPac	0..*
otsimcaconnectivityserviceendpointspec	none	No	OtsiMcgConnectivityServiceEndPointSpec	1

11.3.37 OtsiMcgCsepHasConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcConfigPac	composite	Yes	OtsiMcConfigPac	0..*
otsimcaconnectivityserviceendpointspec	none	No	OtsiMcgConnectivityServiceEndPointSpec	1

11.3.38 OtsiMcgCsepHasFreqConfigPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiMcFreqConfigPac	composite	Yes	OtsiMcFreqConfigPac	0..*
otsimcaconnectivityserviceendpointspec	none	No	OtsiMcgConnectivityServiceEndPointSpec	1

11.3.39 OtsiNepHasOtsiCapabilityPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiCapabilityPac	composite	Yes	OtsiCapabilityPac	1
otsinodeedgepointspec	none	No	OtsiNodeEdgePointSpec	1

11.3.40 OtsiSipHasOtsiCapabilityPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiCapabilityPac	composite	Yes	OtsiCapabilityPac	0..1
otsiserviceinterfacepointspec	none	No	OtsiServiceInterfacePointSpec	1

11.3.41 OtsiSipHasPowerCapabilityPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_powerManagementCapabilityPac	composite	Yes	PowerManagementCapabilityPac	0..1
otsiserviceinterfacepointspec	none	No	OtsiServiceInterfacePointSpec	1

11.3.42 OtsiTtpHasLaserProperties

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
laserProperties	composite	Yes	LaserProperties	0..1
otsiterminationpac	none	No	OtsiTerminationPac	1

11.3.43 OtsiTtpHasReceivePower

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
receivedPower	composite	Yes	PowerProperties	0..1
otsiterminationpac	none	No	OtsiTerminationPac	1

11.3.44 OtsiTtpHasTransmitPower

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
transmitedPower	composite	Yes	PowerProperties	0..1
otsiterminationpac	none	No	OtsiTerminationPac	1

11.3.45 OtsiaCsepHasOtsiCommonConfig

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiCommonConfigPac	composite	Yes	OtsiCommonConfigPac	1..*
otsiaconnectivityserviceendpointspec	none	No	OtsiaCsepTtpPac	1

11.3.46 OtsiaCsepHasOtsiFreqConfig

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiFreqConfigPac	composite	Yes	OtsiFreqConfigPac	0..*
otsiacseptpppac	none	No	OtsiaCsepTtpPac	1

11.3.47 OtsiaCsepHasOtsiSpectrumConfig

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_otsiSpectrConfigPac	composite	Yes	OtsiSpectrConfigPac	0..*
otsiacseptpppac	none	No	OtsiaCsepTtpPac	1

11.3.48 PhyCepPacHasPowerPac

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mediaChannelPowerPac	composite	Yes	MediaChannelPowerPac	0..1
physicalcepppac	none	No	PhysicalCepPac	1

11.4 Data Types

11.4.1 ApplicationIdentifier

The syntax of ApplicationIdentifier is a pair {ApplicationIdentifierType, PrintableString}. The value of ApplicationIdentifierType is either STANDARD or PROPRIETARY. The value of PrintableString represents the standard application code as defined in the ITU-T Recommendations or a vendor-specific proprietary code. If the ApplicationIdentifierType is STANDARD the value of PrintableString represents a standard application code as defined in the ITU-T Recommendations. If the ApplicationIdentifierType is PROPRIETARY, the first six characters of the PrintableString must contain the Hexadecimal representation of an OUI assigned to the vendor whose implementation generated the Application Identifier; the remaining octets of the PrintableString are unspecified. The value of this attribute of an object instance has to be one of the values identified in the attribute SupportableApplicationIdentifierList of the same object instance. The values and value ranges of the optical interface parameters of a standard application code must be consistent with those values specified in the ITU-T Recommendation for that application code.

Attribute Name	Type	Mult.	Access	Stereotypes
applicationIdentifierType	ApplicationIdentifierType	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The ITU-T recommendation which defines the application code format.			
applicationCode	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			

11.4.2 CentralFrequency

This data-type holds the central frequency information as well frequency constraints in terms of GridType (FIXED grid (DWDM or CWDM) or FLEX grid) and AdjustmentGranularity.

Attribute Name	Type	Mult.	Access	Stereotypes
frequencyConstraint	FrequencyConstraint	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description:			
centralFrequency	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The central frequency of the laser specified in MHz. It is the oscillation frequency of the corresponding electromagnetic wave.			

11.4.3 CentralFrequencyBand

This data-type represents a range of central frequency spectrum band specified as lower and upper bounds, inclusive of the bound values. It also holds frequency constraints in terms of GridType (FIXED grid (DWDM or CWDM) or FLEX grid) and AdjustmentGranularity.

Attribute Name	Type	Mult.	Access	Stereotypes
lowerCentralFrequency	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The lower central frequency that can be tuned in the laser specified in MHz. It is the oscillation frequency of the corresponding electromagnetic wave.			
upperCentralFrequency	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 2 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The upper central frequency that can be tuned in the laser specified in MHz. It is the oscillation frequency of the corresponding electromagnetic wave.			
frequencyConstraint	FrequencyConstraint	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			

11.4.4 FrequencyConstraint

This data-type holds the frequency constraint information in terms of GridType (FIXED grid (DWDM or CWDM) or FLEX grid) and AdjustmentGranularity.

Attribute Name	Type	Mult.	Access	Stereotypes
adjustmentGranularity	AdjustmentGranularity	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: Adjustment granularity in Gigahertz. As per ITU-T G.694.1, it is used to calculate nominal central frequency (in THz)			
gridType	GridType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: Specifies the frequency grid standard used to determine the nominal central frequency and frequency slot width			

11.4.5 LaserProperties

Attribute Name	Type	Mult.	Access	Stereotypes
laserStatus	LaserControlStatusType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
laserApplicationType	LaserType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: YES
	Description: The type of laser, its operational wavelengths, and its applications. String size 255.			

Attribute Name	Type	Mult.	Access	Stereotypes
laserBiasCurrent	Real	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
Description:				
The Bias current of the laser that is the medium polarization current of the laser.				
laserTemperature	Real	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NO
Description:				
The temperature of the laser				

11.4.6 ModulationTechnique

The standardModulationTechnique and proprietaryModulationTechnique attributes are mutually exclusive.

Attribute Name	Type	Mult.	Access	Stereotypes
standardModulationTechnique	StandardModulationTechnique	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
proprietaryModulationTechnique	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

11.4.7 PowerProperties

Attribute Name	Type	Mult.	Access	Stereotypes
totalPower	Real	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES
Description:				
The total power at any point in a channel specified in dBm.				
powerSpectralDensity	Real	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: • support: MANDATORY OpenInterfaceModelAttribute • AVC: YES

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: This describes how power of a signal is distributed over frequency specified in nW/MHz				

11.4.8 SpectrumBand

This data-type holds the spectrum information in terms of upper/lower frequency directly or optionally the information to determine this in terms of the nominal central frequency and spectral width for a FIXED grid (DWDM or CWDM) and FLEX grid type systems.

Attribute Name	Type	Mult.	Access	Stereotypes
upperFrequency	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description: The upper frequency bound of the media channel spectrum specified in MHz				
lowerFrequency	Integer	1	RW	OpenModelAttribute • isKey: yes – part: 2 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description: The lower frequency bound of the media channel spectrum specified in MHz				
frequencyConstraint	FrequencyConstraint	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				

11.5 Enumerations

11.5.1 AdjustmentGranularity

Adjustment granularity in Gigahertz. As per ITU-T G.694.1, it is used to calculate nominal central frequency

Contains Enumeration Literals:

- G_100GHZ:
 - 100000 MHz
- G_50GHZ:
 - 50000 MHz
- G_25GHZ:
 - 25000 MHz
- G_12_5GHZ:
 - 12500 MHz
- G_6_25GHZ:
 - 6250 MHz
- G_3_125GHZ:
 - 3125 MHz

- UNCONSTRAINED:

11.5.2 ApplicationIdentifierType

Contains Enumeration Literals:

- PROPRIETARY:
- ITUT_G959_1:
- ITUT_G698_1:
- ITUT_G698_2:
- ITUT_G696_1:
- ITUT_G695:

11.5.3 GridType

The frequency grid standard that specify reference set of frequencies used to denote allowed nominal central frequencies that may be used for defining applications.

Contains Enumeration Literals:

- DWDM:
 - Fixed frequency grid in C & L bands as specified in ITU-T G.694.1
- CWDM:
 - Fixed frequency grid as specified in ITU-T G.694.2
- FLEX:
 - Flexible frequency grid as specified in ITU-T G.694.1. In this case, - the allowed frequency slots have a nominal central frequency (in THz) defined by: $193.1 + n \times 0.00625$ where n is a positive or negative integer including 0 and 0.00625 is the nominal central frequency granularity in THz - and a slot width defined by: $12.5 \times m$ where m is a positive integer and 12.5 is the slot width granularity in GHz. Any combination of frequency slots is allowed as long as no two frequency slots overlap.
- GRIDLESS:
- UNSPECIFIED:
 - Unspecified/proprietary frequency grid

11.5.4 LaserControlStatusType

Contains Enumeration Literals:

- ON:
- OFF:
- PULSING:
- UNDEFINED:

11.5.5 LaserControlType

Contains Enumeration Literals:

- FORCED-ON:
- FORCED-OFF:
- AUTOMATIC-LASER-SHUTDOWN:
- UNDEFINED:

11.5.6 LaserType

Contains Enumeration Literals:

- PUMP:
- MODULATED:
- PULSE:

11.5.7 OpticalRoutingStrategy

Contains Enumeration Literals:

- OPTIMAL_OSNR:
- NO_RELAY:
- MIN_RELAY:
- PREFERRED_NO_CHANGE_WAVELENGTH_AS_RESTORE:
- PREFERRED_NO_SKIPPING_WAVELENGTH:

11.5.8 PhotonicLayerQualifier

Contains Enumeration Literals:

- OTSi:
- OTSiA:
- OTSiMC:
 - OTSiMC represents the bw portion dedicated to an OTSi.
- OTSiMCA:
 - OTSiMCA is the set of OTSiMC supporting an OTSiA.
- MC:
 - The continuous optical spectrum between end points in the photonic layer obtained through optical filter configurations where it is expected one (or more – super channel case) OTSi(s).
- MCA:
 - Media Channel Assembly: the set of one or more MCs supporting one (or more) OTSiA(s).
- OMSA:
- OTSA:
- OCH:
- OMS:
- OTS:
- OTS_OMS:

11.5.9 StandardModulationTechnique

Contains Enumeration Literals:

- RZ:
- NRZ:
- BPSK:
- DPSK:
- QPSK:
- 8QAM:
- 16QAM:
- PAM4:
- PAM8:

11.6 Primitives

12 Streaming Model

TapiStreaming: This module contains TAPI Streaming Model definitions. Source: TapiStreaming.uml Copyright (c) 2018 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

12.1 Diagrams

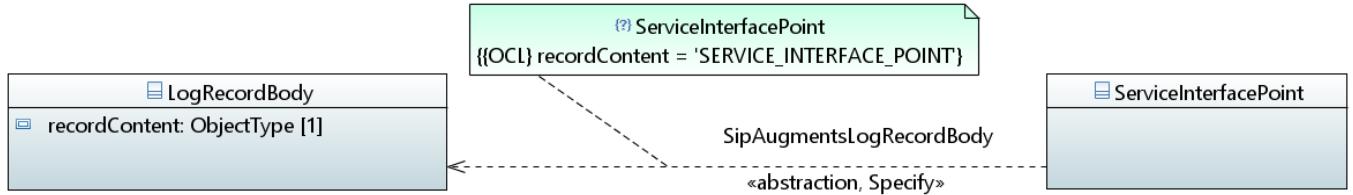


Figure 42 – CommonAugmentationForStreaming

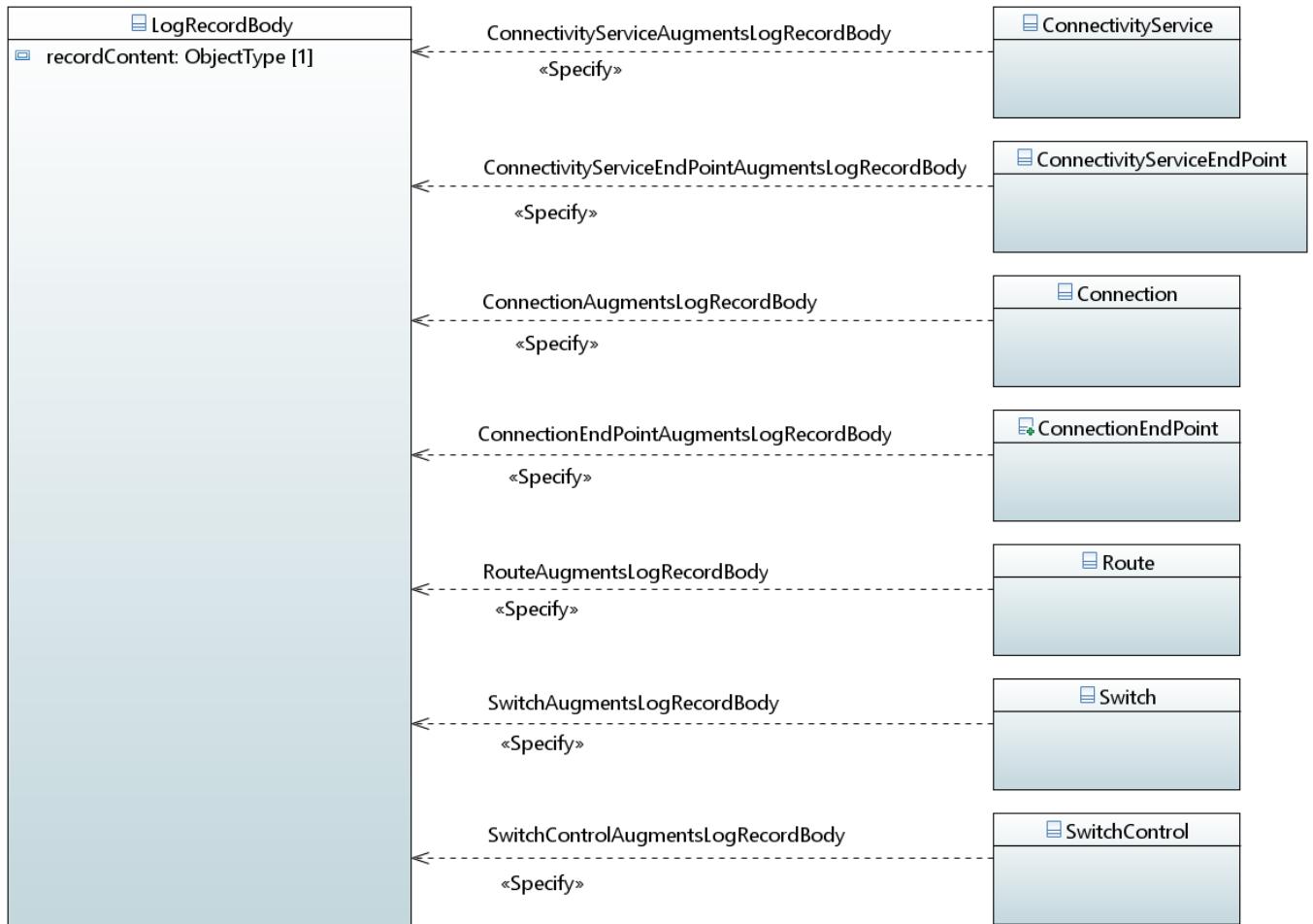


Figure 43 – ConnectivityAugmentationForStreaming



Figure 44 – EquipmentAugmentationForStreaming

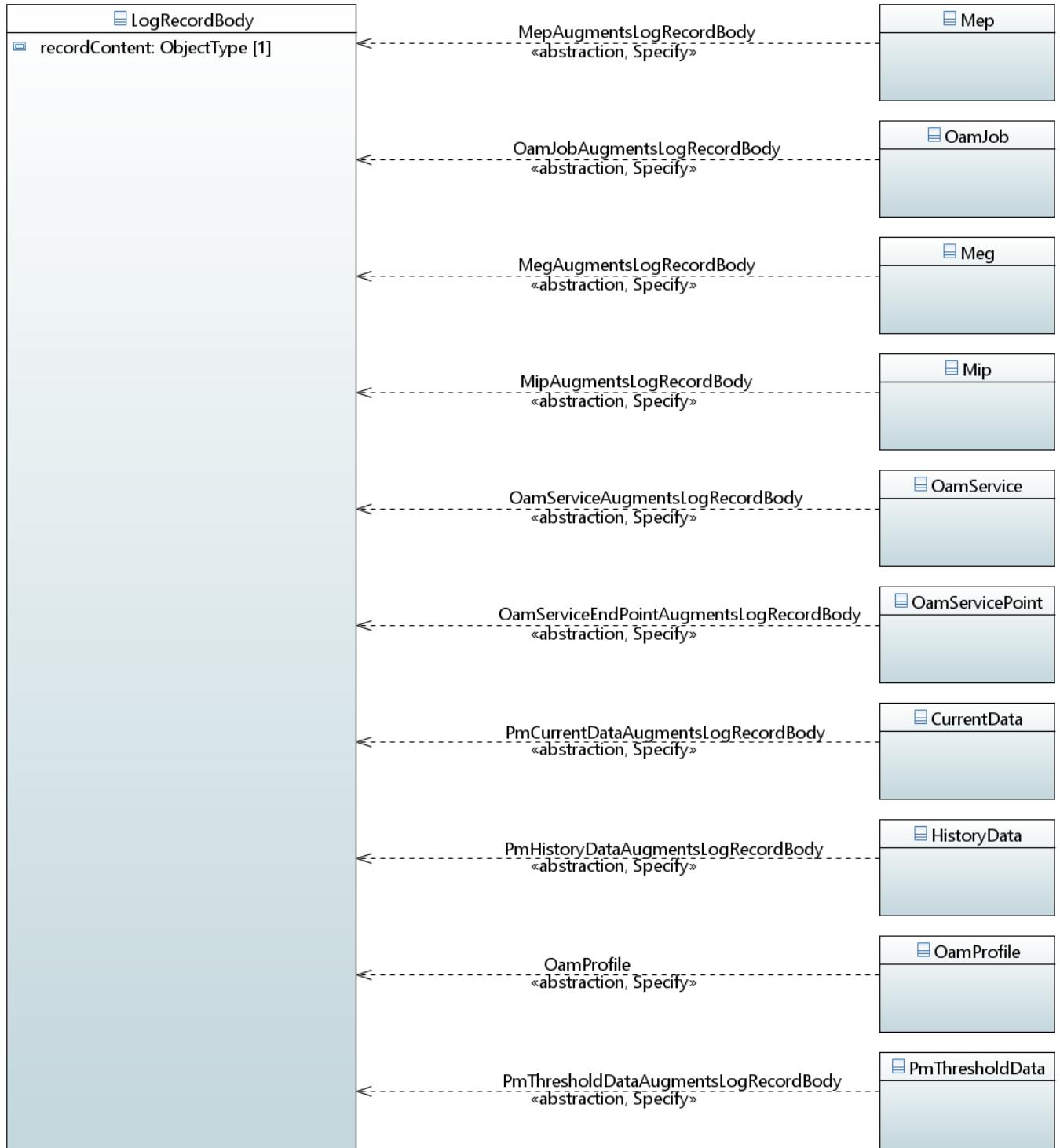


Figure 45 – *OamAugmentationForStreaming*

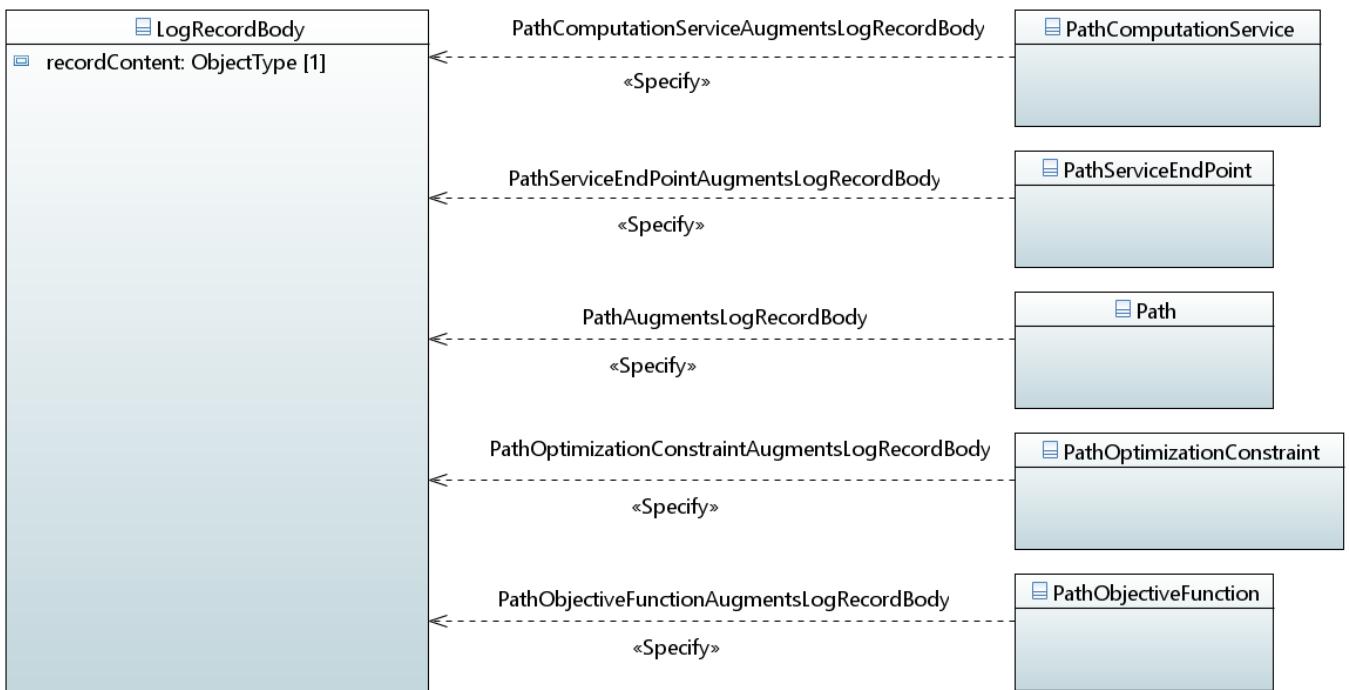


Figure 46 – PathComputationAugmentationForStreaming

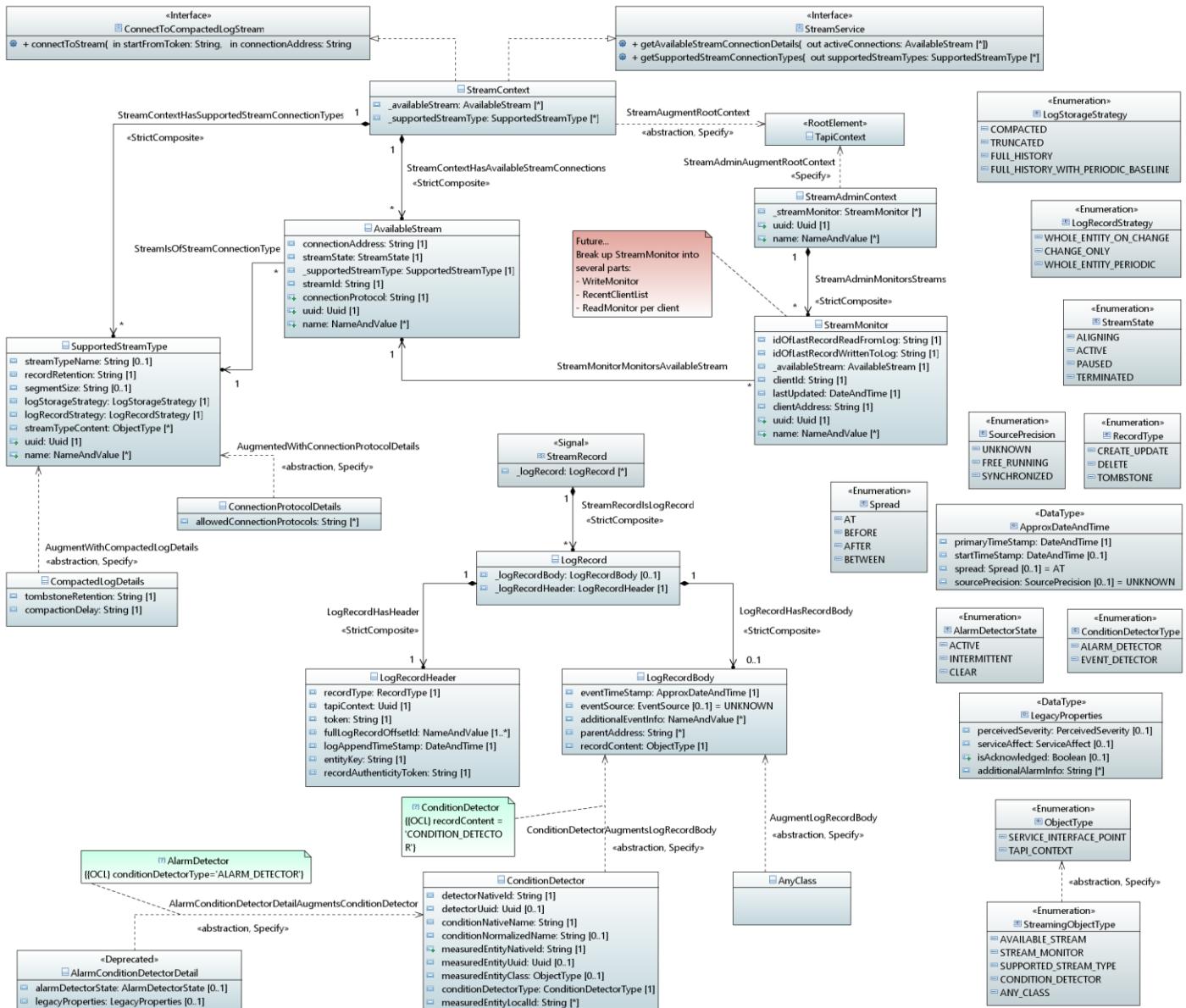
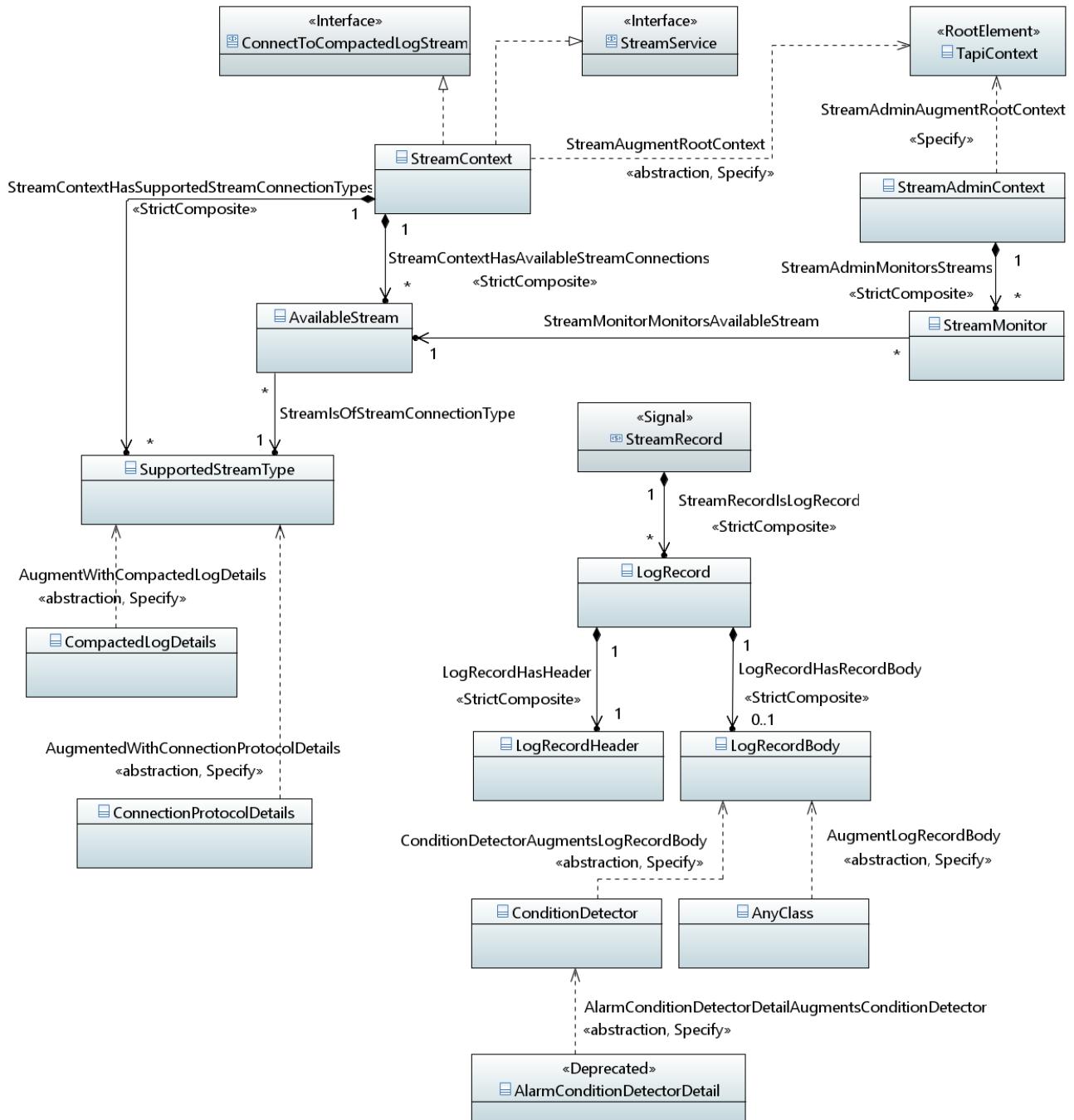
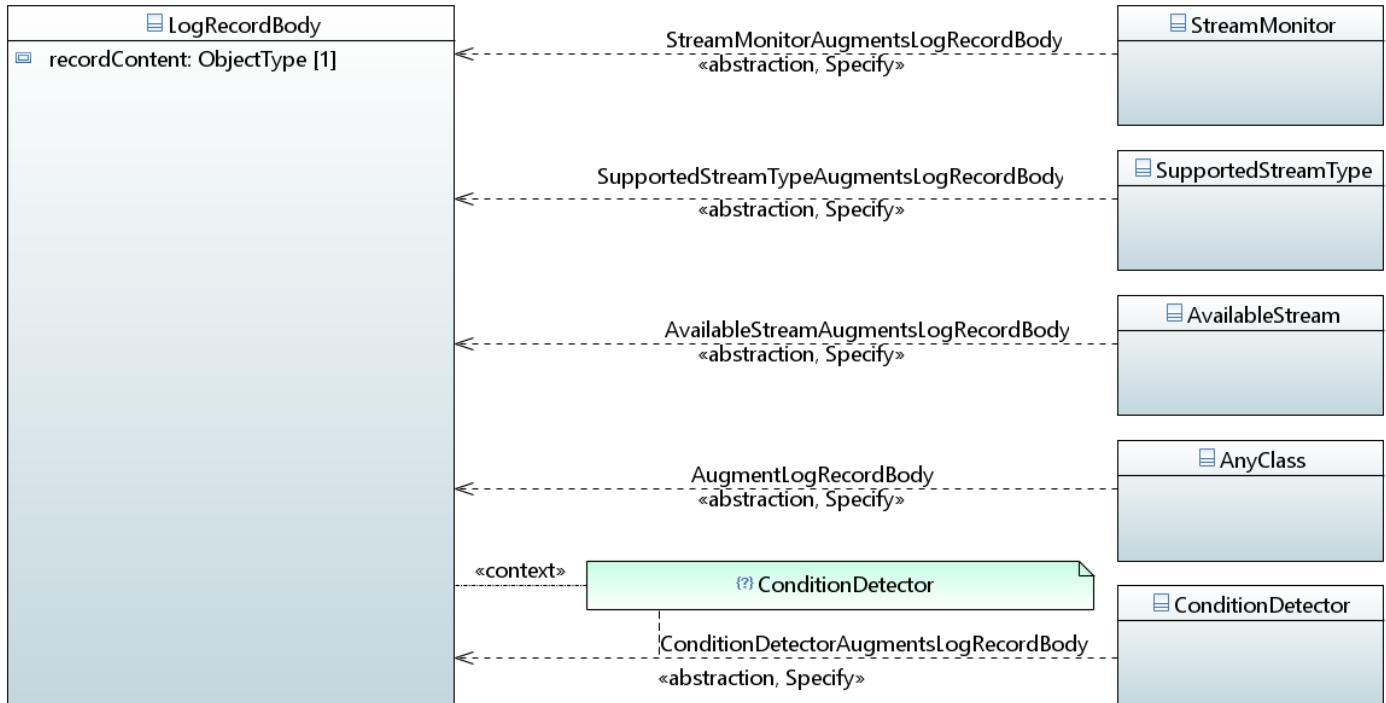
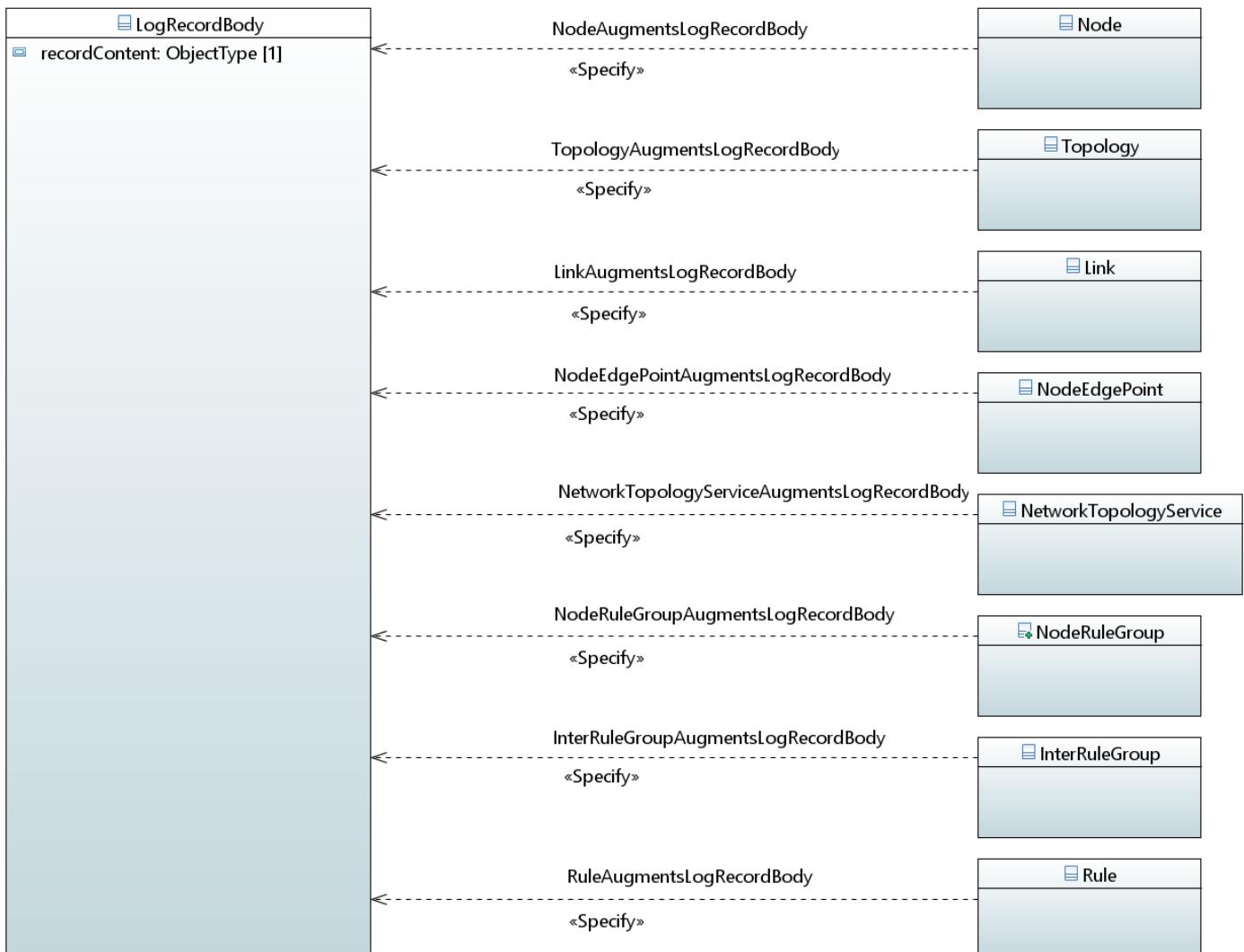


Figure 47 – StreamDetail**Figure 48 – StreamSkeleton**

**Figure 49 – StreamingAugmentationForStreaming****Figure 50 – TopologyAugmentationForStreaming**

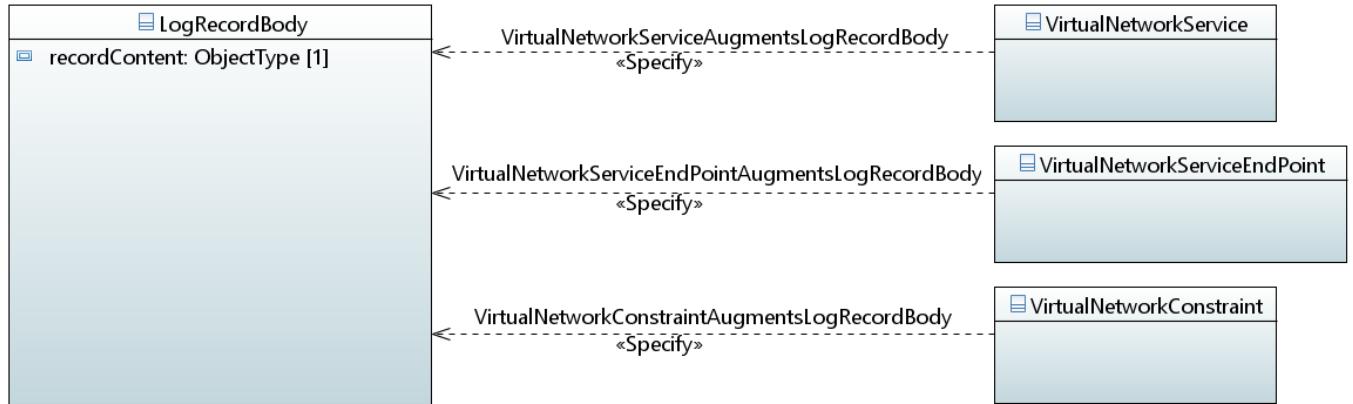


Figure 51 – VirtualNetworkAugmentationForStreaming

12.2 Classes

12.2.1 AlarmConditionDetectorDetail

A record of the state of a detector where that detector has two underlying states that are of asymmetric importance.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA
- Deprecated

Attribute Name	Type	Mult.	Access	Stereotypes
alarmDetectorState	AlarmDetectorState	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY Description: The state of the detector. The detector state accounts for the time characteristics of the detected condition.
legacyProperties	LegacyProperties	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>Alarm systems of the 20th century were based primarily on local lamps (initially filament bulbs) and bells. Lamps can only be on or off, and bells sounding or not sounding, so alarms were Boolean in nature. Where a detector was essentially multi-state it was converted into multiple Boolean statements. The management of the equipments was essentially human only and local only (there were rarely remote systems). The device with the problem was the only possible indicator of importance and it had only three distinct bulbs to illuminate (filament bulbs tend to fail requiring costly replacement). The devices were relatively simple in function and analysis of the detectors was crude. There was only the device to indicate severity. The device also could provide the best view as to whether a service was impacted, although clearly it had almost no knowledge. In a modern solution with well-connected remote systems that increasingly analyze problems and where there is increasingly "lights out" building operation, the device's guess at severity etc. is irrelevant. In addition, with sophisticated resilience mechanisms, the device cannot make any relevant statement on whether the customer service has been impacted. Likewise, in a world where there were no remote systems and local management was the only practice, alarms had to be locally "acknowledged". Where there are remote systems, per alarm acknowledge is burdensome. However, many solutions and operational practices continue to use the historic schemes. On that basis, the schemes are supported but relegated to optional.</p>				

12.2.2 AnyClass

In the final version all classes that can stream will be explicitly associated with the AppendLogRecordBody.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

12.2.3 AvailableStream

Details of stream a stream that can be connected to by a client application.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
connectionAddress	String	1	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>Provides the address for the connection. The format of the address and attachment mechanism will depend on the connection protocol defined in another attribute of this class.</p>			
streamState	StreamState	1	R	<p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA <p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	<p>Description:</p> <p>The state of the stream.</p>			

Attribute Name	Type	Mult.	Access	Stereotypes
_supportedStreamType	SupportedStreamType	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • PassedByReference OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
Identifies the type of stream that is available for connection.				
streamId	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
The id of the stream.				
connectionProtocol	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Names the connection protocol for this particular available stream. The connection protocol is chosen from the list of connection protocols identified in the referenced SupportedStreamType.				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. A UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-'.'+[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

12.2.4 CompactedLogDetails

Details relevant for a CompactedLog. The essential Compacted Log strategy is to remove historic records about a particular thing such that only the latest record about each thing exists in the log. The essential strategy is refined by the parameters of this structure.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass

- objectCreationNotification: NA
- objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
tombstoneRetention	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
compactionDelay	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

12.2.5 ConditionDetector

ConditionDetector represents any monitoring component that assesses properties of something and determines from those properties what conditions are associated with the thing. For example, a thing might be "too hot" or might be "unreliable". The monitor may have a multi-state output. The ConditionDetector lifecycle depends upon the lifecycle of the thing it is monitoring (this is a general OAM model consideration). The entityKey in the AppendLogRecordHeader for a ConditionDetector record is the nativeDetector Id which may be derived from other ids (most robustly, nativeOwningEntityName (to which the detector is associated) + nativeConditionName).

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
conditionNativeName	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
measuredEntityUuid	Uuid	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The uid of the TAPI entity that represents the entity measured at source. If the TAPI entity cannot be identified as it cannot be mapped, then this property can be omitted. If the TAPI entity is a local class, then this is the UUID of the GlobalClass parent of the entity of which this is part.			
Description:				
measuredEntityNativeId	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The identifier (invariant over the life) of the instance of the measured entity at the source.			
Description:				
conditionNormalizedName	String	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	It is often the case that there is a Condition Name that is commonly used or even standardized that has not been used by the source of the condition. If this is the case, then that common/standard name is provided in via this property.			
Description:				
measuredEntityClass	ObjectType	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The TAPI class of the measured entity. If the class cannot be identified as it cannot be mapped, then this property can be omitted.			
Description:				
detectorUuid	Uuid	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The uid of the TAPI entity that represents the detector. If the TAPI entity cannot be identified as it cannot be mapped, then this property can be omitted. Where the detector is not modelled independently, but instead is a part of the measured entity such that it is identified by a "local id" built from the UUID of the measured entity and the condition name, then this property may be omitted.			
Description:				
detectorNativeId	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The identifier (invariant over the life) of the instance of the detector at the source (e.g. a device). The string reported in this field must include the: - device identifier - one or more resource identifiers including that of the measured entity It need not include the condition name.			

Attribute Name	Type	Mult.	Access	Stereotypes
conditionDetectorType	ConditionDetectorType	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: Identifies the type of detector. This drives the conditional augmentation. Some types of detector may not need specific augmentation.			
measuredEntityLocalId	String	0..*	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: Where the measured entity is a local class and hence does not have a UUID the local ID is provided in conjunction with the parents ID. The parent may also be a local class in which case its ID is a local ID along with its parent ID. There will be a parent which is a global class which then supplies a UUID. The ID of the entity that is being measured is the combination of the UUID and the ordered list of local IDs. The local ID may not be provided where: - the report about a global class - the report is relying on the detectorNativeId.			

12.2.6 ConnectionProtocolDetails

Details of the connection protocols available for the specific stream.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
allowedConnectionProtocols	String	0..*	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: Name of the allowed protocol.			

12.2.7 LogRecord

A specific atomic entry in a log.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_logRecordHeader	LogRecordHeader	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
The header of the log record providing general parameters of the record common to all records.				
_logRecordBody	LogRecordBody	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
The body of the log record providing specific logged details.				

12.2.8 LogRecordBody

The specific details of the Record.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
eventTimeStamp	ApproxDateAndTime	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
Time of the event at the origin of the event that triggered the generation of the record. The structure allows for time uncertainty.				
eventSource	EventSource	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
Indicates whether the source is controlled (under management control) or potentially chaotic (under resource control). The time characteristic of the source may be determined from the metadata describing the resource (e.g., a detector). Where there is an alternative (and probably more detailed) source of information on time characteristic this attribute can be omitted.				
additionalEventInfo	NameAndValue	0..*	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Addition information related to the event such as change reason where changeReason would be the name and the value text would provide information on the reason for change.			
parentAddress	String	0..*	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: Where the entity is a local class this provides the ordered list of ids from the closest global class (a UUID cast as a string) to the direct parent (which may be the global class). The field can include all entities back to the Context and hence can be used for global classes where the tree is being represented in full. Gives the position of the entity in the address tree (usually containment) that is raising the event by providing the name/id values in the address of the parent. Is the sequence of named levels in the tree up to but excluding the entity of the notification. It includes the device id where relevant.			
recordContent	ObjectType	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: The identifier of the object class in the record body detail. This property is used to control the conditional augmentation of the body with detail.			

12.2.9 LogRecordHeader

The header of the log record providing general parameters of the record common to all records.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
tapiContext	Uuid	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: The identifier of the context.			
token	String	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: A coded (and compact) form of the fullLogRecordOffsetId. This property is used to request streaming from a particular point (e.g., the last correctly handled record).			

Attribute Name	Type	Mult.	Access	Stereotypes
fullLogRecordOffsetId	NameAndValue	1..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	In a complex log solution there may be various parts to the log. The record token is a compressed form of log record reference. This property provides the verbose form For example, it may include: - stream id - topic - partition - partition offset - sequence number (the offset is essentially the sequence number associated with the partition)			
Description:				
logAppendTimeStamp	DateAndTime	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The time when the record was appended to the log.			
Description:				
entityKey	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The identifier of the entity that is used in a Compacted log as the compaction key. The entityKey value, where appropriate, may be based upon the identifiers from the event source. It can be built from some specific detail combination that meets the necessary uniqueness and durability requirements. entityKey is the value used during compaction. Ideally it is a UUID format, if this can be formed from the source identifier.			
Description:				
recordType	RecordType	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
	The type of the record. Can be used to understand which elements of the record will be present.			
Description:				
recordAuthenticityToken	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				

12.2.10 StreamAdminContext

Context providing access to stream administration functionality.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_streamMonitor	StreamMonitor	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				The list of available stream monitors.
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

12.2.11 StreamContext

All streams relevant to the specific TapiContext.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_availableStream	AvailableStream	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
_supportedStreamType	SupportedStreamType	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			

12.2.12 StreamMonitor

Information on the monitoring of the use of a specific AvailableStream.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
idOfLastRecordReadFromLog	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The id/key of the last record read from the log by the client stream. The analysis of this value needs to account for stream buffering in the comms layer.			
idOfLastRecordWrittenToLog	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The id/key of the last record written to the log. This is the same value for all clients of the stream.			
_availableStream	AvailableStream	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA PassedByReference OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description:			
clientId	String	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	The id of the connected client.			
lastUpdated	DateAndTime	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> ◦ AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The date/time when the values provided were recorded.			
clientAddress	String	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: The address of the connected client that is being monitored.			
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

12.2.13 SupportedStreamType

Definition of a supported stream type.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description:			
streamTypeName	String	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: Name of the stream type.			

Attribute Name	Type	Mult.	Access	Stereotypes
recordRetention	String	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
				Time in minutes. Statement of retention time and/or retention capacity in bytes. Key word "FOREVER" means that records will never be removed from the log. May be overridden for particular cases of specific LogStorageStrategy (via augment).
Description:				
segmentSize	String	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
				Size of sub-structuring of the log.
Description:				
streamTypeContent	ObjectType	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
				Identifies the classes that are supported through the stream. The list may be a subset of the classes within the context.
Description:				
logStorageStrategy	LogStorageStrategy	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
				Indicates the storage characteristics of the log supporting the stream.
Description:				
logRecordStrategy	LogRecordStrategy	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
				Indicates the type of content of each log record.
Description:				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
				UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6

Attribute Name	Type	Mult.	Access	Stereotypes
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

12.3 Associations

12.3.1 LogRecordHasHeader

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_logRecordHeader	composite	Yes	LogRecordHeader	1
appendlogrecord	none	No	LogRecord	1

12.3.2 LogRecordHasRecordBody

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_logRecordBody	composite	Yes	LogRecordBody	0..1
appendlogrecord	none	No	LogRecord	1

12.3.3 StreamAdminMonitorsStreams

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_streamMonitor	composite	Yes	StreamMonitor	0..*
streamadmincontext	none	No	StreamAdminContext	1

12.3.4 StreamContextHasAvailableStreamConnections

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
availableStream	composite	Yes	AvailableStream	0..*
streamcontext	none	No	StreamContext	1

12.3.5 StreamContextHasSupportedStreamConnectionTypes

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_supportedStreamType	composite	Yes	SupportedStreamType	0..*
streamcontext	none	No	StreamContext	1

12.3.6 StreamIsOfStreamConnectionType

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_supportedStreamType	none	Yes	SupportedStreamType	1
activestream	none	No	AvailableStream	0..*

12.3.7 StreamMonitorMonitorsAvailableStream

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
availableStream	none	Yes	AvailableStream	1
streammonitor	none	No	StreamMonitor	0..*

12.3.8 StreamRecordIsLogRecord

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
logRecord	composite	Yes	LogRecord	0..*
streamrecord	none	No	StreamRecord	1

12.4 Data Types

12.4.1 ApproxDateAndTime

Allows for recording of an aspect of imprecise time.

Attribute Name	Type	Mult.	Access	Stereotypes
primaryTimeStamp	DateAndTime	1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: Time of the event at the origin where known precisely. Where the event is known to be before particular time, this field records that time. Where the event is known to be after a particular time, this field records that time (this is an unusual case where there is no proposed before time). Where the event is known to have occurred in a time window, this field records the end time (the time before which the event must have occurred).			
startTimeStamp	DateAndTime	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
	Description: The time after which the event is known to have occurred when the event is known to have occurred between two times. The primaryTimeStamp provides the end time.			

Attribute Name	Type	Mult.	Access	Stereotypes
spread	Spread	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
Indicates the knowledge of the time of occurrence of the event.				
sourcePrecision	SourcePrecision	0..1	R	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
Indicates how well the source time is synchronized with network time.				

12.4.2 LegacyProperties

At this point in the evolution of control solutions LegacyProperties are probably mandatory, however, it is anticipated that as control solutions advance the LegacyProperties will become irrelevant.

Attribute Name	Type	Mult.	Access	Stereotypes
perceivedSeverity	PerceivedSeverity	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
A device will provide an indication of importance for each alarm. This property indicates the importance. In some cases, the severity may change through the life of an active alarm.				
serviceAffect	ServiceAffect	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Some devices will indicate, from its very narrow viewpoint, whether service has been impacted or not. This property carries this detail.				
isAcknowledged	Boolean	0..1	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Devices offer a capability to acknowledge alarms (to stop the bells ringing). Often an EMS will offer a similar capability. This property reflects the current acknowledge state.				
additionalAlarmInfo	String	0..*	RW	OpenInterfaceModelAttribute • AVC: NA OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
Often, alarms raised by devices have additional information. This property can be used to convey this.				

12.5 Enumerations

12.5.1 AlarmDetectorState

The state of the processed Boolean alarm detector. The source applies some analysis to the raw detector to determine the state. The processing by the source may vary.

Contains Enumeration Literals:

- ACTIVE:
 - The detector is indicating the operation of the monitored entity is not within acceptable bounds with respect to the specific condition measured. If INTERMITTENT is supported there may be a requirement for persisted unacceptable operation after a problem occurs before ACTIVE is declared. An alternative may be to declare INTERMITTENT. Where INTERMITTENT is supported, ACTIVE indicates the stable presence of a problem.
- INTERMITTENT:
 - The detector is indicating the operation of the monitored entity is intermittently not within acceptable bounds with respect to the specific condition measured. INTERMITTENT support is optional. Where it is supported there may be a requirement for persisted unacceptable operation after a problem occurs before ACTIVE or INTERMITTENT is declared.
- CLEAR:
 - The detector is indicating the operation of the monitored entity is within acceptable bounds with respect to the specific condition measured. There may be a requirement for persisted acceptable operation after a problem before clear is declared etc. For a Compacted Log solution a CLEAR alarm will be considered as a DELETE ChangeType in the RecordBody. Hence a CLEAR will also cause a Tombstone record in a Compacted Log solution.

12.5.2 ConditionDetectorType

The type of condition detector. The type relates to the characteristics of the detection and reporting strategies. This drives the conditional augment.

Contains Enumeration Literals:

- ALARM_DETECTOR:
 - A type of detector used for reporting problems. The underlying raw detector is two state from the perspective of the monitored condition. The detector is asymmetric in nature. One state indicates that there is a problem and the other state indicates that there is no problem.
- EVENT_DETECTOR:
 - A type of detector used for reporting events.

12.5.3 EventSource

Source of the event. Use to give some idea of the time characteristics of the event source.

Contains Enumeration Literals:

- RESOURCE_OPERATION:
 - The event is from the operation of the network resources. The event source has a relatively fast time characteristic.
- MANAGEMENT_OPERATION:
 - Event is from a Management operation (slow control). The event source has a relatively slow time characteristic.
- UNKNOWN:
 - The origin of the event is not known.

12.5.4 LogRecordStrategy

Defines the different approaches for logging information about an event covering the log trigger and the log content.

Contains Enumeration Literals:

- WHOLE_ENTITY_ON_CHANGE:
 - A record provides a snapshot of a whole entity and a snapshot is taken on each change. The record includes all properties and values whether they have changed or not.
- CHANGE_ONLY:
 - Each record only provides a view of the changes that have occurred (on a per entity change basis). E.g., the log only includes the attribute that has changed and not other attributes that have not changed.
- WHOLE_ENTITY_PERIODIC:
 - A snapshot of an entity is recorded periodically regardless of whether there has been change or not.

12.5.5 LogStorageStrategy

Defines the storage (record retention) approach.

Contains Enumeration Literals:

- COMPACTED:
 - The log uses some mechanism to remove noisy detail whilst enabling the client to achieve eventual consistency (alignment) with current state.
- TRUNCATED:
 - The log only maintains recent records and disposes of old records. This log does not alone enable the client to achieve alignment with current state.
- FULL_HISTORY:
 - Maintains a history from system initiation with no missing records. Provides initial state at the beginning of the history
- FULL_HISTORY_WITH_PERIODIC_BASELINE:
 - Provides a history with initial state and periodic/occasional statements of current state at a particular point in time.

12.5.6 PerceivedSeverity

The values for importance of an ACTIVE, INTERMITTENT or CLEAR alarm.

Contains Enumeration Literals:

- CRITICAL:
 - The highest severity of ACTIVE/INTERMITTENT alarm.
- MAJOR:
 - The middle severity of ACTIVE/INTERMITTENT alarm.
- MINOR:
 - The lowest severity of ACTIVE/INTERMITTENT alarm.
- WARNING:
 - An extremely low importance ACTIVE/INTERMITTENT alarm (lower than MINOR).
- CLEARED:
 - The severity of a CLEAR where no other severity information is available.

12.5.7 RecordType

The type of the record. Used to understand what log content will be present and how to interpret it. For some record types there is special encoding. A ACTIVE alarm and an INTERMITTENT alarm are CREATE_UPDATE. A CLEAR alarm is DELETE with an adjacent TOMBSTONE record.

Contains Enumeration Literals:

- CREATE_UPDATE:
 - The record includes a create or update. Where there is an update in a non-compacted log the information will be sparse (e.g., a single attribute) and about an entity that is already known.
- DELETE:
 - The record is about a delete. The record may have a LogRecordHeader and a LogRecordBody but no augmented content. The entityKey should be sufficient to identify the entity to be deleted. Under certain circumstances there may be class content in the LogRecordBody.
- TOMBSTONE:
 - Used in a Compacted log to remove old records and truncate deletion history. Is only a LogRecordHeader with no LogRecordBody.

12.5.8 ServiceAffect

Indicates whether the device considers the condition to be impacting service. Note that the detected condition along with knowledge of the topology and protection provide a more suitable approach.

Contains Enumeration Literals:

- SERVICE_AFFECTING:
 - The condition is believed to impact service.
- NOT_SERVICE_AFFECTING:
 - The condition is believed to not impact service.
- UNKNOWN:
 - The service impact of the condition is not known.

12.5.9 SourcePrecision

Alternative statements about timing precision at the event source.

Contains Enumeration Literals:

- UNKNOWN:
 - The state of the clock at the event source is not known. The view of time of day at the source is suspect.
- FREE_RUNNING:
 - The clock at the event source is free-running. The view of time of day at the source may be significantly different from that at other sources.
- SYNCHRONIZED:
 - The clock at the event source is appropriately synchronized to the timing master. The view of time of day at the source should be essentially the same as that at other time-synchronized sources.

12.5.10 Spread

The alternative time of occurrence statements.

Contains Enumeration Literals:

- AT:
 - The event occurred at a particular time.
- BEFORE:
 - The event occurred before a particular time.
- AFTER:
 - The event occurred after a particular time.
- BETWEEN:
 - The event occurred between two stated times.

12.5.11 StreamState

The state of the available stream.

Contains Enumeration Literals:

- ALIGNING:
 - The log that underpins the stream is aligning with other backend services and hence may not be providing full service. If events are provided, they will be completely valid.
- ACTIVE:
 - The stream is operating such that if a client connects records will be provided as per back pressure etc.
- PAUSED:
 - Although the stream is available it has been paused by the administrator such that the records are being appended to the log but a new client will not receive any events whilst the stream is paused.
- TERMINATED:
 - The stream is essentially no longer available. It will be removed from the AvailableStreams list shortly.

12.5.12 StreamingObjectType

The list of TAPI Streaming Object types/classes.

Contains Enumeration Literals:

- AVAILABLE_STREAM:
- STREAM_MONITOR:
- SUPPORTED_STREAM_TYPE:
- CONDITION_DETECTOR:
- ANY_CLASS:

12.6 Primitives

13 Topology Model

TapiTopology: This module contains TAPI Topology Model definitions. Source: TapiTopology.uml
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13.1 Diagrams

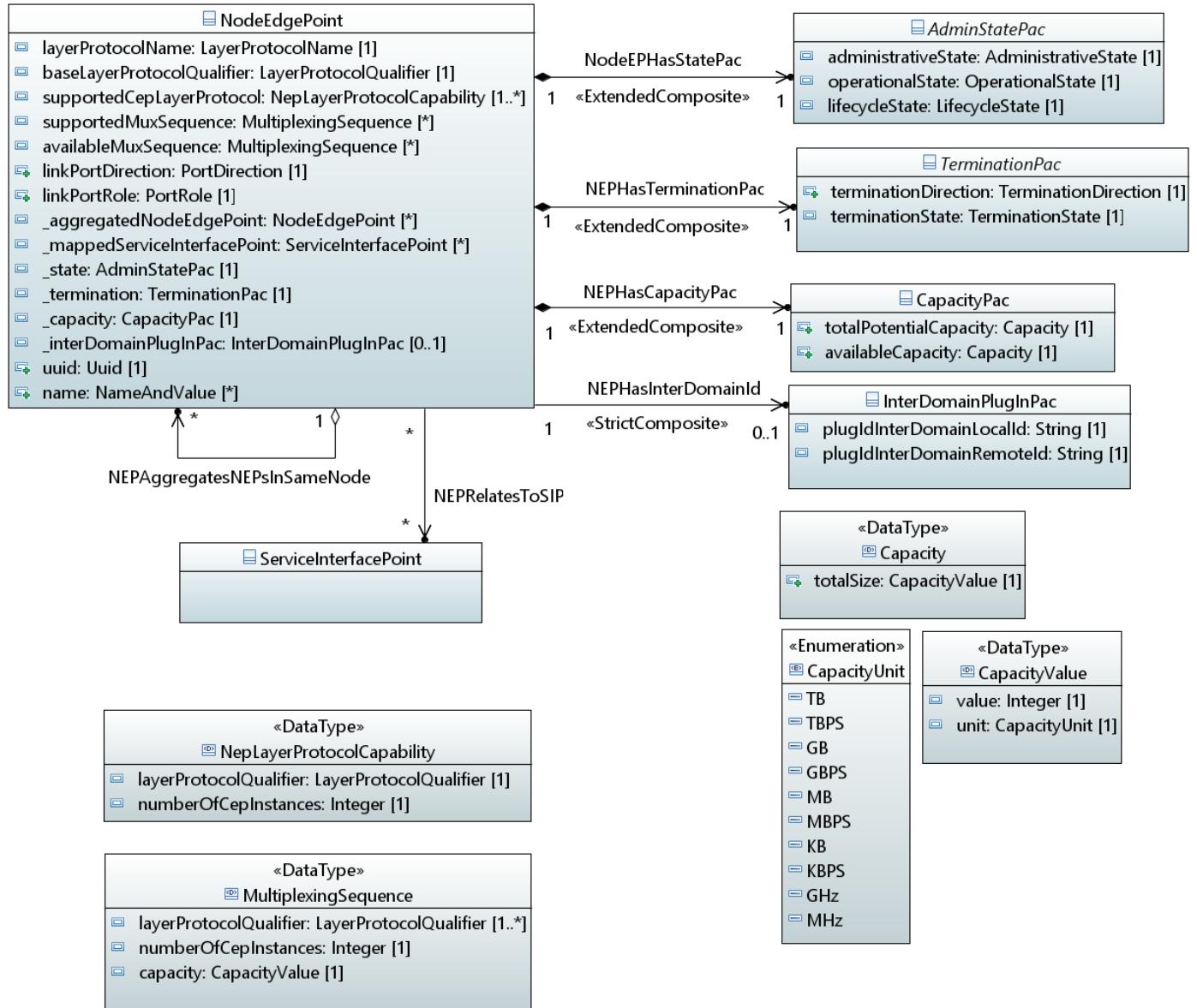
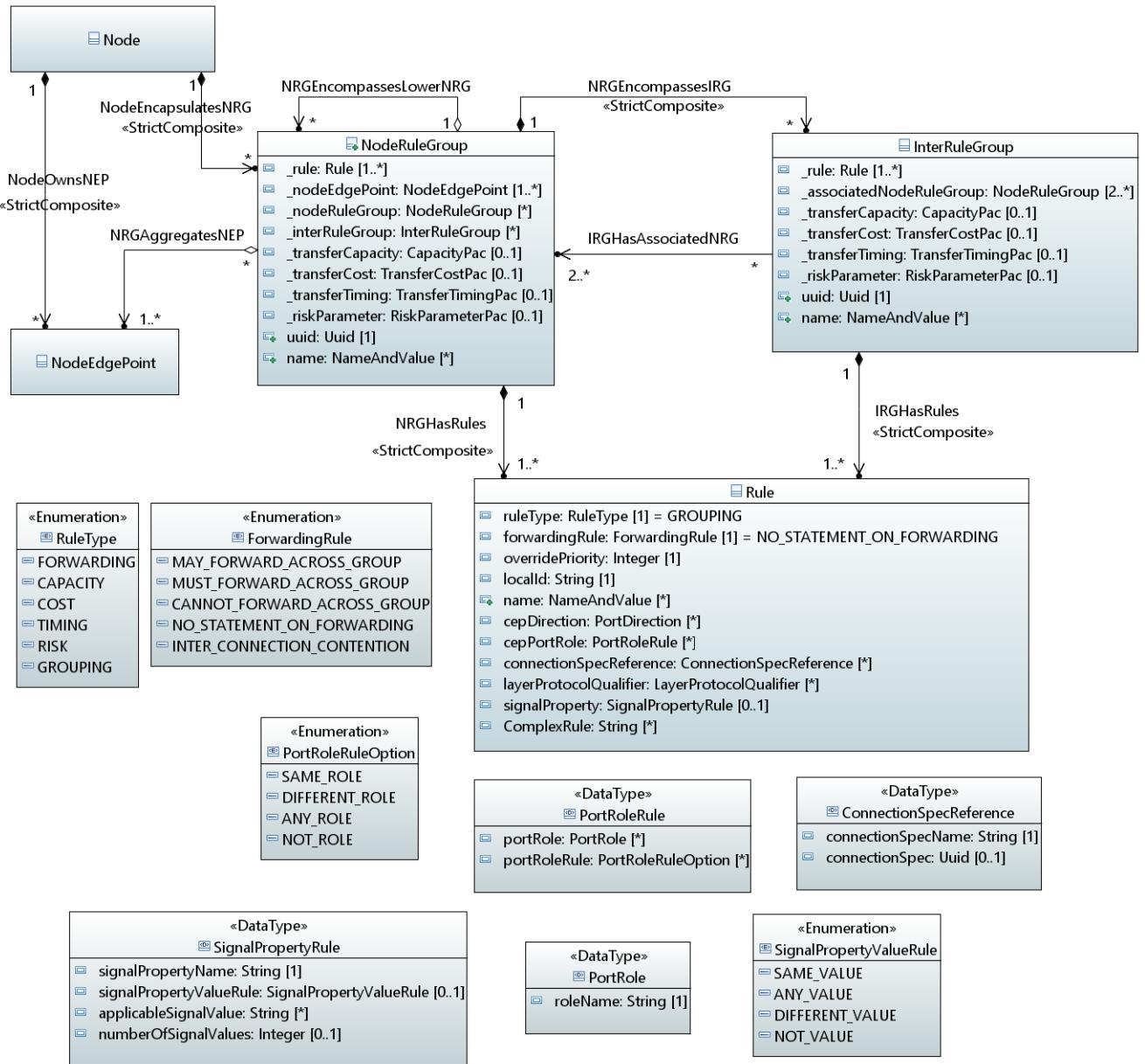


Figure 52 – EdgePointDetails

Figure 53 – **NodeConstraints**

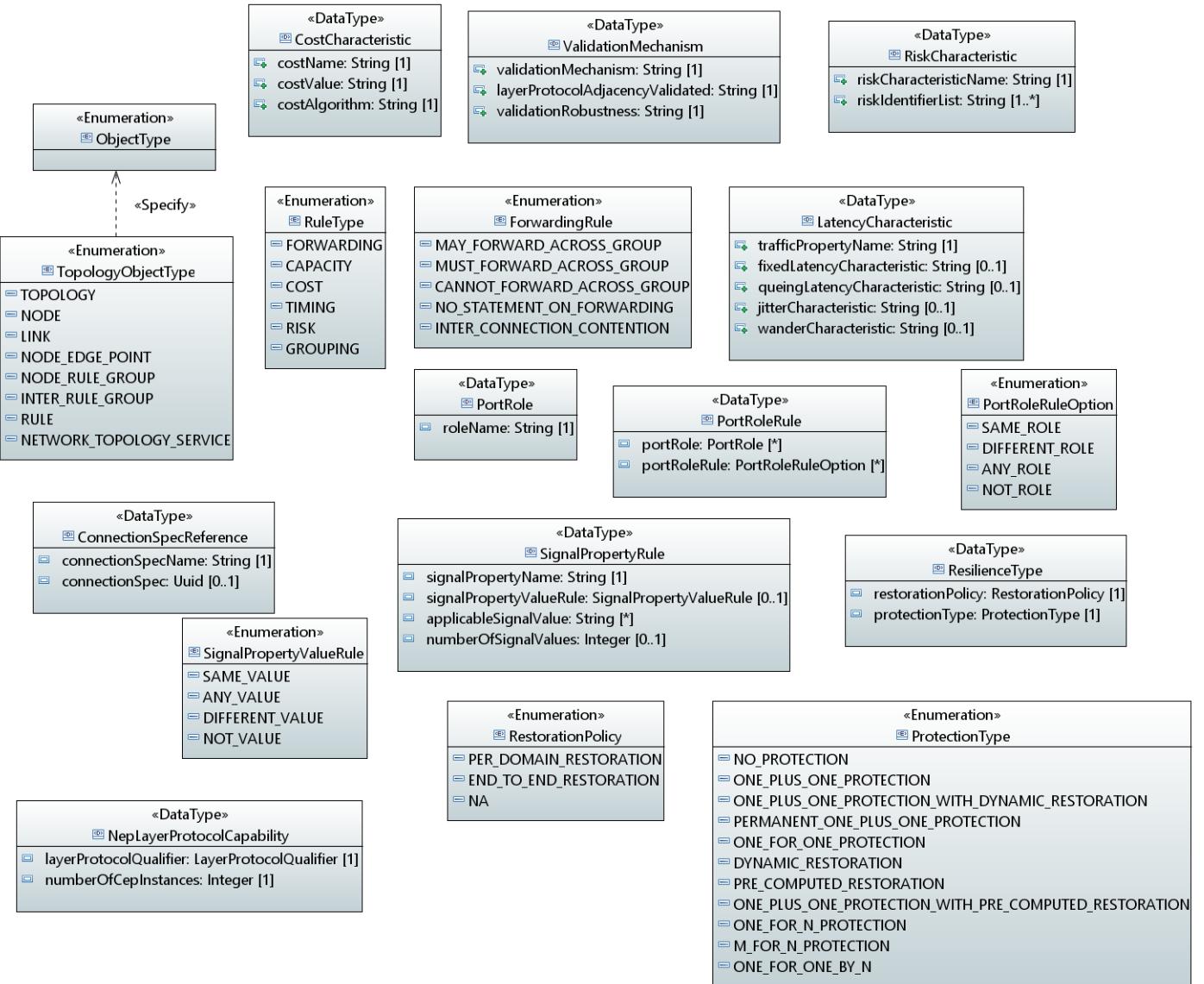
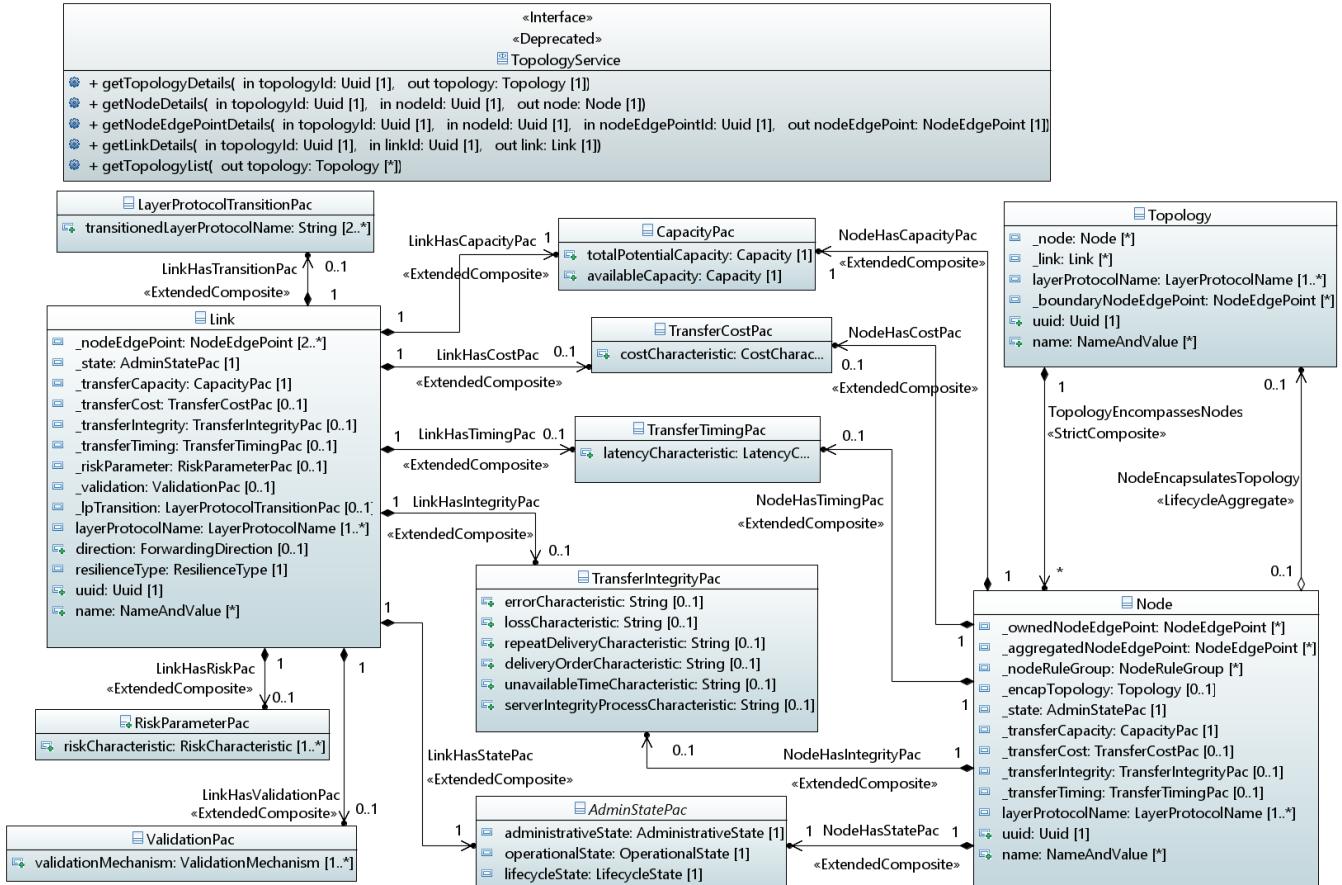
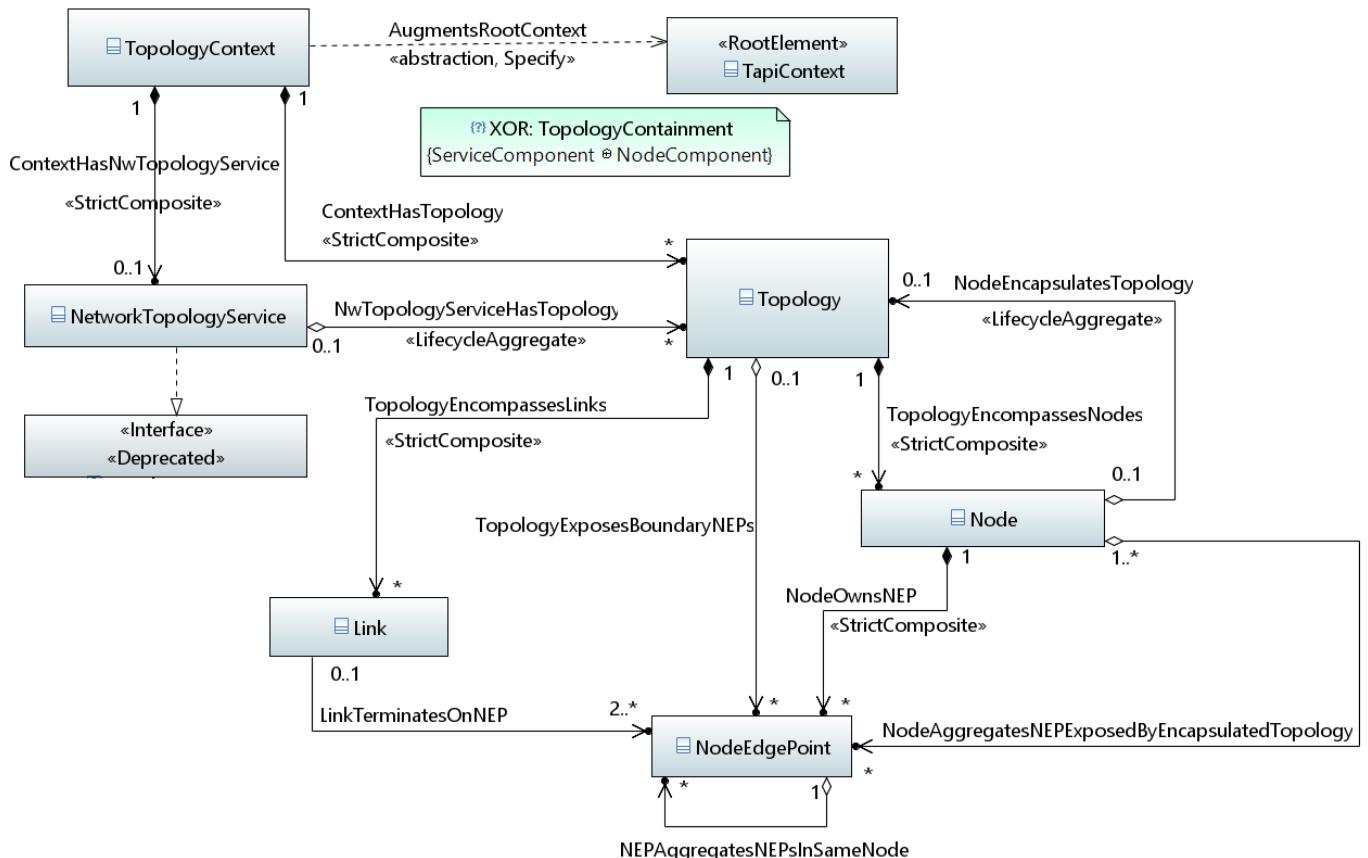


Figure 54 – TopologyDataTypes

**Figure 55 – TopologyServiceDetails****Figure 56 – TopologyServiceSkeleton**

13.2 Classes

13.2.1 InterDomainPlugInPac

NEP at ENNI shall include an ENNI identifier (inter domain plug id) which must be unique in both the connected managed domains, to support the automatic discovery of interdomain links between E-NNI interfaces of e.g. different network providers. The inter domain plug id can be based on OTN technology (OTU or ODU Trail Trace Identifier, SAPI). ITU-T G.709: The access point identifier shall consist of a three-character international segment and a twelve-character national segment coded according to [ITU-T T.50]. The international segment field provides a three-character ISO 3166 geographic/political country code (G/PCC). The country code shall be based on the three-character uppercase alphabetic ISO 3166 country code. The national segment field consists of two subfields: the ITU carrier code (ICC) followed by a unique access point code (UAPC). The ITU carrier code is assigned to a network operator/service provider and shall consist of 1-6 left-justified characters, alphabetic, or leading alphabetic with trailing numeric [e.g., "USATELCORuapc"].

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
plugIdInterDomainLocalId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: Source Access Point Identifier (SAPI) in TxTI. G.709 TxTI: string[64 bytes]: The Trail Trace Identifier (TTI) information, provisioned by the managing system at the termination source, to be placed in the TTI overhead position of the source of a trail for transmission.			
plugIdInterDomainRemotId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: Expected Source Access Point Identifier (ExSAPI). G.709 ExSAPI: Provisioned by the managing system, to be compared with the TTI accepted (AcTI) at the overhead position of the sink for the purpose of checking the integrity of connectivity. AcTI: string [64 bytes] The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail.			

13.2.2 InterRuleGroup

Rules that apply between groups of NodeEdgePoint (NEP) instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_rule	Rule	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
The list of rules of the InterRuleGroup.				
_associatedNodeRuleGroup	NodeRuleGroup	2..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The NodeRuleGroups that the InterRuleGroup constrains interconnection between. The CEPs of the NEPs of a referenced NodeRuleGroup can interconnect to the CEPs of the NEPs of another referenced NodeRuleGroup constrained by the rules of the InterRuleGroup.				
_transferCapacity	CapacityPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The rule relates to transfer capacity constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, must abide by the transfer capacity statement. The capacity is assumed to be maximum allowed.				
_transferCost	TransferCostPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The rule relates to transfer cost constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the cost stated. Several rules may state different costs for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.				
_transferTiming	TransferTimingPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The rule relates to transfer timing constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the timing penalty stated. Several rules may state different timing penalties for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.				
_riskParameter	RiskParameterPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The rule relates to risk constraints. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the risk penalty stated. Several rules may state different risk penalties for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.				

Attribute Name	Type	Mult.	Access	Stereotypes
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			

13.2.3 LayerProtocolTransitionPac

Relevant for a Link that is formed by abstracting one or more termination entities (in a stack) to focus on the flow and deemphasize the protocol transformation. This abstraction is relevant when considering multi-layer routing and the protocol transformation is not too complex, e.g. there is not multiplexing. This Pac provides the relevant abstractions of the embedded termination entities: The layer protocols of the embedded termination entities and the order of their application to the signal is still relevant and need to be accounted for. Links that included details in this Pac are often referred to as Transitional Links.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
transitionedLayerProtocolName	String	2..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

13.2.4 Link

A Link is a topological entity which is an abstract representation of the effective adjacency between two or more Node instances (specifically NodeEdgePoint instances) in a Topology.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_nodeEdgePoint	NodeEdgePoint	2..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The NEPs connected by the Link.				
_state	AdminStatePac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The Link status information.				
_transferCapacity	CapacityPac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The Link capacity.				
_transferCost	TransferCostPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The transfer cost of the Link.				
_transferIntegrity	TransferIntegrityPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The transfer integrity of the Link.				
_transferTiming	TransferTimingPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
The transfer timing of the Link.				

Attribute Name	Type	Mult.	Access	Stereotypes
_riskParameter	RiskParameterPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The risk parameters of the Link.
_validation	ValidationPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The validation mechanisms of the Link.
_lpTransition	LayerProtocolTransitionPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The information on encapsulated termination functions, applicable in case of Transitional Link.
layerProtocolName	LayerProtocolName	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The layer protocol(s) of the Link.
direction	ForwardingDirection	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The directionality of the Link.
resilienceType	ResilienceType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The underlying resilience type of the Link.
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

13.2.5 NetworkTopologyService

A NetworkTopologyService represents an "intent-like" request for topology related provisioning, for future developments. The NetworkTopologyService is a container for topology request details and is distinct from the Topology that realize the request.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_topology	Topology	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The Topology instance(s) tracking the state of the allocated resources for the support of the NetworkTopologyService.			
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	<p>Description:</p> <p>List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.</p>				

13.2.6 Node

The Node is a topological entity which is an abstract representation of the forwarding capabilities (of transport characteristic information) of a particular set of network resources. It is described in terms of the aggregation of set of ports (NodeEdgePoint) belonging to those network resources and the potential to enable forwarding of information between those edge ports. At the lowest level of recursion, a Node may represent a switch matrix (i.e., a fabric) in an equipment.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_ownedNodeEdgePoint	NodeEdgePoint	0..*	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
<p>Description:</p> <p>The NEPs belonging to / owned by this Node. By convention, only the Node instances at the lowest partitioning level "own" the NEPs. In other words, each and every NEP instance is owned by a Node at the lowest partitioning level.</p>				
_aggregatedNodeEdgePoint	NodeEdgePoint	0..*	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
<p>Description:</p> <p>The NEPs aggregated by this Node. By convention, only the Node instances which are not at the lowest partitioning level "aggregate" the NEPs. In other words, each and every NEP instance is owned by a Node at the lowest partitioning level. A subset of NEP instances may be aggregated by Nodes at higher partitioning levels.</p>				
_nodeRuleGroup	NodeRuleGroup	0..*	RW	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA
<p>Description:</p> <p>The Node rules applicable to this Node.</p>				
_encapTopology	Topology	0..1	R	<p>OpenModelAttribute</p> <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY <p>OpenInterfaceModelAttribute</p> <ul style="list-style-type: none"> • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: A Node may encapsulate one Topology instance, which in turn encompasses Nodes at lower partitioning level.			
_state	AdminStatePac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The Node status information.			
_transferCapacity	CapacityPac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The transfer capacity of the Node.			
_transferCost	TransferCostPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The transfer cost of the Node.			
_transferIntegrity	TransferIntegrityPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The transfer integrity of the Node.			
_transferTiming	TransferTimingPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The transfer timing of the Node.			
layerProtocolName	LayerProtocolName	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The layer protocol(s) of the (multi-layer) Node.			
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

13.2.7 NodeEdgePoint

The NodeEdgePoint (NEP) is a topological entity which represents the ingress-egress edge-port functions that access the forwarding capabilities provided by the Node. Hence it provides an encapsulation of addressing, mapping, termination, adaptation and OAM functions of one or more transport layers (including circuit and packet forms) performed at the entry and exit points of the Node.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The layer protocol of the NodeEdgePoint (NEP).			
layerProtocolName	LayerProtocolName	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The layer protocol qualifier at the bottom of supported stack.			
supportedCepLayerProtocol	NepLayerProtocolCapability	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The potentially supported protocols and flows. In ITU-T terms, the potentially supported adaptation and termination functions.			

Attribute Name	Type	Mult.	Access	Stereotypes
supportedMuxSequence	MultiplexingSequence	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
More detailed description of (potential) capability than "supportedCepLayerProtocol".				
availableMuxSequence	MultiplexingSequence	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
More detailed description of available capability than "supportedCepLayerProtocol".				
linkPortDirection	PortDirection	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The orientation of flow at the (conceptual) port of the associated Link.				
linkPortRole	PortRole	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The role of the (conceptual) port of the associated Link.				
_aggregatedNodeEdgePoint	NodeEdgePoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A NodeEdgePoint (NEP) instance may aggregate one or more other NEP instances for e.g. pooling purposes, when a set of NEP instances are equivalent for usage.				
_mappedServiceInterfacePoint	ServiceInterfacePoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
A NodeEdgePoint (NEP) may be associated to a ServiceInterfacePoint (SIP), i.e. when the NEP is the resource oriented view of a SIP. NEP mapped to more than one SIP (slicing/virtualizing) or a SIP mapped to more than one NEP (load balancing/resilience) should be considered experimental.				
_state	AdminStatePac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The NodeEdgePoint (NEP) status information.				

Attribute Name	Type	Mult.	Access	Stereotypes
_termination	TerminationPac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Termination direction and termination state of the NodeEdgePoint (NEP).				
_capacity	CapacityPac	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The NodeEdgePoint (NEP) capacity information.				
_interDomainPlugInPac	InterDomainPlugInPac	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
ENNI Identifier.				
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

13.2.8 NodeRuleGroup

Rules that apply to a group of NodeEdgePoint (NEP) instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_rule	Rule	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description:			The list of rules of the NodeRuleGroup.
_nodeEdgePoint	NodeEdgePoint	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			NEPs and their client CEPs that the rules apply to.
_nodeRuleGroup	NodeRuleGroup	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			NodeRuleGroups may be nested such that finer grained rules may be applied. A nested rule group should have a subset of the NEPs of the superior rule group.
_interRuleGroup	InterRuleGroup	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			Nested NodeRuleGroups may have InterRuleGroups. The Superior NodeRuleGroup contains the nested NodeRuleGroups and their associated InterRuleGroups. This is equivalent to the Node-Topology hierarchy.
_transferCapacity	CapacityPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			The rule relates to transfer capacity constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, must abide by the transfer capacity statement. The capacity is assumed to be maximum allowed.
_transferCost	TransferCostPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description:			The rule relates to transfer cost constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the cost stated. Several rules may state different costs for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.

Attribute Name	Type	Mult.	Access	Stereotypes
_transferTiming	TransferTimingPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
				The rule relates to transfer timing constraint. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the timing penalty stated. Several rules may state different timing penalties for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.
Description:				
_riskParameter	RiskParameterPac	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				The rule relates to risk constraints. The connections, matching the properties of the rule, formed between the NEPs, governed by the group, will acquire the risk penalty stated. Several rules may state different risk penalties for the same configuration. This indicated that there is underlying complexity that is not being fully expressed at the level of abstraction of the rules.
Description:				
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6
Description:				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
				List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.

13.2.9 RiskParameterPac

The risk characteristics of a topological entity (e.g. the Link) come directly from the underlying physical realization. The risk characteristics propagate from the physical realization to the client and from the server layer to the client layer, this propagation may be modified by protection. A topological entity may suffer degradation or failure as a result of a problem in a part of the underlying realization. The realization can be partitioned into segments which have some relevant common failure modes. There is a risk of failure/degradation of each segment of the underlying realization. Each segment is a part of a larger physical/geographical unit that behaves as one with respect to failure (i.e. a failure will have a high probability of impacting the whole unit (e.g. all cables in the same duct). Disruptions to that larger physical/geographical unit will impact (cause failure/errors to) all topological entities that use any part of that larger physical/geographical entity. Any topological entity that uses any part of that larger physical/geographical unit will suffer impact and hence each topological entity shares risk. The identifier of each physical/geographical unit that is involved in the realization of each segment of a topological entity can be listed in the RiskParameter_Pac of that topological entity. A segment has one or more risk characteristic.

Shared risk between two topological entities compromises the integrity of any solution that use one of those topological entity as a backup for the other. Where two topological entities have a common risk characteristic they have an elevated probability of failing simultaneously compared to two topological entities that do not share risk characteristics.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
riskCharacteristic	RiskCharacteristic	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

13.2.10 Rule

Single complex rule statement. A Node with no rule group has no restrictions and is essentially May/Any. A NodeRuleGroup constrains the CEP connectability in the Node. A Connection from a CEP/NEP must abide by all rules that relate to that CEP/NEP. Rules that are for a particular layerProtocolQualifier, connectionSpecReference, cepPortRole and cepDirection combination must be abided by in combination as dictated by overridePriority. If a particular connectionSpecReference does not have any rule statements then it is not supported and connections of that type are not possible within the rule group. If a particular cepPortRole of a particular connectionSpecReference does not have any rule statements then it is not supported and connections of that connectionSpecReference (type) cannot have that cepPortRole for CEPs from NEPs in that rule group. If a particular cepDirection for a particular connectionSpecReference does not have any rule statements then it is not supported and connections of that connectionSpecReference (type) cannot have that cepPortDirection for CEPs from NEPs in that rule group. Rules that are for different layerProtocolQualifiers or connectionSpecReferences are independent and provide options for Connection in the NodeRuleGroup. Some rules may apply to multiple connectionSpecReferences and all cepPortRoles and all cepDirections.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
ruleType	RuleType	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The focus of the rule.			
forwardingRule	ForwardingRule	1	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORYOpenInterfaceModelAttribute• AVC: NA
	Description: Rule that restricts the creation/deletion of a Connection between points in the NodeRuleGroup or related by the InterRuleGroup between NodeRuleGroups.			
overridePriority	Integer	1	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORYOpenInterfaceModelAttribute• AVC: NA
	Description: The overridePriority allows for one rule in a rule group to override another. Priority n rules override priority n+1 rules. Rules of the same priority override as follows (n overrides n+1): 1 - MustNot, 2 - Must, 3 - May, 4 - Null. Within a rule the flexibility rules (signal, port role...) override as follows (n overrides n+1): 1 - Any, 2 - Same, 3 - Different. Where there are two or more "Same" rules, they will form an intersection where all must be met.			
cepDirection	PortDirection	0..*	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORYOpenInterfaceModelAttribute• AVC: NA
	Description: The list of CEP directions that the rule applies to, where the CEP direction is the orientation of flow at the (conceptual) port of the associated Connection. No entry means all CEP directions.			
cepPortRole	PortRoleRule	0..*	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORYOpenInterfaceModelAttribute• AVC: NA
	Description: Indicates the port role to which the rule applies. The port role is interpreted in the context of the connection type which is identified by the connection spec, if any. The port role is not meaningful in the absence of a connection spec reference. If a NodeRuleGroup carries a port role, that role applies also to the associated InterRuleGroup where the combination of the roles in the NodeRuleGroups at the ends of the InterGroupRule define the Connection orientation. For example a root-and-leaf Connection may be used in a Node where a NodeRuleGroup collects one set of NEPs has the port role "root" and another NodeRuleGroup collects another set of NEPs has the port role "leaf" where these are joined by an InterRuleGroup. This combination specifies an allowed orientation of the root-and-leaf Connection. No port role statement means all port roles are allowed.			
connectionSpecReference	ConnectionSpecReference	0..*	R	OpenModelAttribute <ul style="list-style-type: none">• isKey: No• isInvariant: false• valueRange: no range constraint• support: MANDATORYOpenInterfaceModelAttribute• AVC: NA
	Description: Identifies the type of Connection that the rule applies to. If the attribute is not present then the rule applies to all types of Connection supported by the device.			

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolQualifier	LayerProtocolQualifier	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
	Description: Qualifies a rule for a particular layer protocol identifying the qualifiers that the rule applies to. If the attribute is not present then the rule applies to all relevant qualifiers of the layer protocol of the parent entity.			
signalProperty	SignalPropertyRule	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: The rule only applies to signals with the properties listed. If the attribute is not present then the rule applies to all signals.			
ComplexRule	String	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: Allows for more complex rules where the basic rule system is not sufficient.			
localId	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: An identifier that is unique in the context of the GlobalClass from which it is inseparable.			
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
	Description: List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.			

13.2.11 Topology

The Topology is an abstract representation of the topological aspects of a particular set of network resources. It is described in terms of the underlying topological network of Node and Link instances that enable the forwarding capabilities of that particular set of network resources.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_node	Node	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The list of Nodes which the Topology encompass.				
_link	Link	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The list of Links which the Topology encompass.				
layerProtocolName	LayerProtocolName	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The layer protocol(s) of the (multi-layer) Topology.				
_boundaryNodeEdgePoint	NodeEdgePoint	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
This list is applicable only in case of a "top" Topology (i.e. a Topology which is not encapsulated in a Node) which does not encompass a single Node. In this case, the list identifies the NEPs which are at the boundary of the Topology, which can be a subset of all the NEPs belonging to encompassed Nodes. It is expected that these boundary NEPs have an associated SIP to allow the provisioning of ConnectivityServices spanning the whole Topology.				
uuid	Uuid	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}+[0-9a-fA-F]{4}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

13.2.12 TopologyContext

This object class represents the scope of control that a particular SDN controller has with respect to a particular network, specifically regarding the topology description. An instance of this class includes its Topology object instances.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_nwTopologyService	NetworkTopologyService	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The defined operations.			
_topology	Topology	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The included Topology instances.			

13.2.13 TransferCostPac

The cost characteristics of a topological entity (e.g. a Link or a Node) not necessarily correlated to the cost of the underlying physical realization. They may be quite specific to the individual topological entity e.g. opportunity cost. Relates to layer capacity. There may be many perspectives from which cost may be considered for a particular topological entity and hence many specific costs and potentially cost algorithms. Using an entity will incur a cost.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
costCharacteristic	CostCharacteristic	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The list of costs where each cost relates to some aspect of the topological entity.			

13.2.14 TransferIntegrityPac

Transfer integrity characteristic covers expected/specify/acceptable characteristic of degradation of the transferred signal. It includes all aspects of possible degradation of signal content as well as any damage of any form to the total topological entity and to the carried signals. Note that the statement is of total impact to the topological entity so any partial usage of the topological entity (e.g. a signal that does not use full capacity) will only suffer its portion of the impact.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
errorCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Describes the degree to which the signal propagated can be errored. Applies to TDM systems as the errored signal will be propagated and not to packet as errored packets will be discarded.				
lossCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Describes the acceptable characteristic of lost packets where loss may result from discard due to errors or overflow. Applies to packet systems and not to TDM (as for TDM errored signals are propagated unless grossly errored and overflow/underflow turns into timing slips).				
repeatDeliveryCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Primarily applies to packet systems where a packet may be delivered more than once (in fault recovery for example). It can also apply to TDM where several frames may be received twice due to switching in a system with a large differential propagation delay.				
deliveryOrderCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
Description:				
Describes the degree to which packets will be delivered out of sequence. Does not apply to TDM as the TDM protocols maintain strict order.				

Attribute Name	Type	Mult.	Access	Stereotypes
unavailableTimeCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • AVC: NA
Description:				
Describes the duration for which there may be no valid signal propagated.				
serverIntegrityProcessCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
Describes the effect of any server integrity enhancement process on the characteristics of the topological entity.				

13.2.15 TransferTimingPac

A topological entity (e.g. a Link or a Node) will suffer effects from the underlying physical realization related to the timing of the information passed by the topological entity.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
latencyCharacteristic	LatencyCharacteristic	1..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
Description:				
The effect on the latency of a queuing process. This only has significant effect for packet based systems and has a complex characteristic.				

13.2.16 ValidationPac

Validation covers the various adjacent discovery and reachability verification protocols. Also may cover information source and degree of integrity.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
validationMechanism	ValidationMechanism	1..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				Provides details of the specific validation mechanism(s) used to confirm the presence of an intended topological entity.

13.3 Associations

13.3.1 ContextHasNwTopologyService

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nwTopologyService	composite	Yes	NetworkTopologyService	0..1
context	none	No	TopologyContext	1

13.3.2 ContextHasTopology

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topology	composite	Yes	Topology	0..*
context	none	No	TopologyContext	1

13.3.3 IRGHasAssociatedNRG

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_associatedNodeRuleGroup	none	Yes	NodeRuleGroup	2..*
interrulegroup	none	No	InterRuleGroup	0..*

13.3.4 IRGHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCapacity	composite	Yes	CapacityPac	0..1
interrulegroup	none	No	InterRuleGroup	1

13.3.5 IRGHasCostPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCost	composite	Yes	TransferCostPac	0..1
interrulegroup	none	No	InterRuleGroup	1

13.3.6 IRGHasRiskPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_riskParameter	composite	Yes	RiskParameterPac	0..1
interrulegroup	none	No	InterRuleGroup	1

13.3.7 IRGHasRules

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_rule	composite	Yes	Rule	1..*
interrulegroup	none	No	InterRuleGroup	1

13.3.8 IRGHasTimingPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferTiming	composite	Yes	TransferTimingPac	0..1
interrulegroup	none	No	InterRuleGroup	1

13.3.9 LinkHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCapacity	composite	Yes	CapacityPac	1
link	none	No	Link	1

13.3.10 LinkHasCostPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCost	composite	Yes	TransferCostPac	0..1
link	none	No	Link	1

13.3.11 LinkHasIntegrityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferIntegrity	composite	Yes	TransferIntegrityPac	0..1
link	none	No	Link	1

13.3.12 LinkHasRiskPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_riskParameter	composite	Yes	RiskParameterPac	0..1
_link	none	No	Link	1

13.3.13 LinkHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
_link	none	No	Link	1

13.3.14 LinkHasTimingPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferTiming	composite	Yes	TransferTimingPac	0..1
_link	none	No	Link	1

13.3.15 LinkHasTransitionPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_lpTransition	composite	Yes	LayerProtocolTransitionPac	0..1
_link	none	No	Link	1

13.3.16 LinkHasValidationPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_validation	composite	Yes	ValidationPac	0..1
_link	none	No	Link	1

13.3.17 LinkTerminatesOnNEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nodeEdgePoint	none	Yes	NodeEdgePoint	2..*
_linkPort	none	No	Link	0..1

13.3.18 NEPAggregatesNEPsInSameNode

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_aggregatedNodeEdgePoint	shared	Yes	NodeEdgePoint	0..*
_nodeEdgePoint	none	No	NodeEdgePoint	1

13.3.19 NEPHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_capacity	composite	Yes	CapacityPac	1
nodeedgepoint	none	No	NodeEdgePoint	1

13.3.20 NEPHasInterDomainId

ENNI NEP may have Inter Domain Plug Id.

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_interDomainPlugInPac	none	Yes	InterDomainPlugInPac	0..1
nodeedgepoint	none	No	NodeEdgePoint	1

13.3.21 NEPHasTerminationPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_termination	composite	Yes	TerminationPac	1
nodeedgepoint	none	No	NodeEdgePoint	1

13.3.22 NEPRelatesToSIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_mappedServiceInterfacePoint	none	Yes	ServiceInterfacePoint	0..*
_mappedNodeEdgePoint	none	No	NodeEdgePoint	0..*

13.3.23 NRGAggregatesNEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nodeEdgePoint	shared	Yes	NodeEdgePoint	1..*
noderulegroup	none	No	NodeRuleGroup	0..*

13.3.24 NRGEencompassesIRG

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_interRuleGroup	composite	Yes	InterRuleGroup	0..*
noderulegroup	none	No	NodeRuleGroup	1

13.3.25 NRGEncompassesLowerNRG

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nodeRuleGroup	shared	Yes	NodeRuleGroup	0..*
noderulegroup	none	No	NodeRuleGroup	1

13.3.26 NRGHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCapacity	composite	Yes	CapacityPac	0..1
noderulegroup	none	No	NodeRuleGroup	1

13.3.27 NRGHasCostPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCost	composite	Yes	TransferCostPac	0..1
noderulegroup	none	No	NodeRuleGroup	1

13.3.28 NRGHasRiskPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_riskParameter	composite	Yes	RiskParameterPac	0..1
noderulegroup	none	No	NodeRuleGroup	1

13.3.29 NRGHasRules

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_rule	composite	Yes	Rule	1..*
noderulegroup	none	No	NodeRuleGroup	1

13.3.30 NRGHasTimingPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
transferTiming	composite	Yes	TransferTimingPac	0..1
noderulegroup	none	No	NodeRuleGroup	1

13.3.31 NodeAggregatesNEPEXposedByEncapsulatedTopology

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_aggregatedNodeEdgePoint	shared	Yes	NodeEdgePoint	0..*
_node	none	No	Node	1..*

13.3.32 NodeEPHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
_nodeEdgePoint	none	No	NodeEdgePoint	1

13.3.33 NodeEncapsulatesNRG

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_nodeRuleGroup	composite	Yes	NodeRuleGroup	0..*
_node	none	No	Node	1

13.3.34 NodeEncapsulatesTopology

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_encapTopology	shared	Yes	Topology	0..1
_forwardingDomain	none	No	Node	0..1

13.3.35 NodeHasCapacityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCapacity	composite	Yes	CapacityPac	1
_node	none	No	Node	1

13.3.36 NodeHasCostPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferCost	composite	Yes	TransferCostPac	0..1
_node	none	No	Node	1

13.3.37 NodeHasIntegrityPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferIntegrity	composite	Yes	TransferIntegrityPac	0..1
_node	none	No	Node	1

13.3.38 NodeHasStatePac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_state	composite	Yes	AdminStatePac	1
_node	none	No	Node	1

13.3.39 NodeHasTimingPac

Applied stereotypes:

- ExtendedComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_transferTiming	composite	Yes	TransferTimingPac	0..1
_node	none	No	Node	1

13.3.40 NodeOwnsNEP

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_ownedNodeEdgePoint	composite	Yes	NodeEdgePoint	0..*
_node	none	No	Node	1

13.3.41 NwTopologyServiceHasTopology

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topology	shared	Yes	Topology	0..*
_nwTopologyService	none	No	NetworkTopologyService	0..1

13.3.42 TopologyEncompassesLinks

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_link	composite	Yes	Link	0..*
_forwardingDomain	none	No	Topology	1

13.3.43 TopologyEncompassesNodes

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_node	composite	Yes	Node	0..*
_upperLevelFd	none	No	Topology	1

13.3.44 TopologyExposesBoundaryNEPs

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_boundaryNodeEdgePoint	shared	Yes	NodeEdgePoint	0..*
topology	none	No	Topology	0..1

13.4 Data Types

13.4.1 ConnectionSpecReference

The definition of the type of Connection. This definition will explain the flows in the Connection and how they relate to the roles of (conceptual) ports.

Attribute Name	Type	Mult.	Access	Stereotypes
connectionSpecName	String	1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The name of the Connection type spec. This can be used as a reference to a paper document where full formal machine interpretable specs are not supported.				
connectionSpec	Uuid	0..1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The reference to the formal Connection type spec.				

13.4.2 CostCharacteristic

The cost characteristic related to some aspect of a topological entity.

Attribute Name	Type	Mult.	Access	Stereotypes
costName	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
Description:				
The cost characteristic will be related to some aspect of the topological entity (e.g. \$ cost, routing weight). This aspect will be conveyed by the costName.				
costValue	String	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The specific cost.			
costAlgorithm	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The cost may vary based upon some properties of the topological entity. The rules for the variation are conveyed by the costAlgorithm.			

13.4.3 LatencyCharacteristic

Provides information on latency characteristic for a particular stated trafficProperty.

Attribute Name	Type	Mult.	Access	Stereotypes
trafficPropertyName	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
				Description: The identifier of the specific traffic property to which the queuing latency applies.
fixedLatencyCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
				Description: A topological entity suffers delay caused by the realization of the servers (e.g. distance related; FEC encoding etc.) along with some client specific processing. This is the total average latency effect of the topological entity.
queuingLatencyCharacteristic	String	0..1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
				Description: The specific queuing latency for the traffic property.
jitterCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
				Description: High frequency deviation from true periodicity of a signal and therefore a small high rate of change of transfer latency. Applies to TDM systems (and not packet).
wanderCharacteristic	String	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: Low frequency deviation from true periodicity of a signal and therefore a small low rate of change of transfer latency. Applies to TDM systems (and not packet).				

13.4.4 MultiplexingSequence

The supported multiplexing sequences, e.g. - ODU0; ODU1; ODU2; ODU4 : 80 - ODU0; ODU1; ODU2; ODU3; ODU4 : 64 - ODUflex; ODU2; ODU3; ODU4 : 64 [64/ts] : 10G - ODUflex; ODU2; ODU4: 80 [80/ts] : 10G - ODU1; ODU2; ODU3; ODUCn : 40 [mult. for n] - OTS; OMS; MC; OTSiMC : 80 : 50G - OTSi; ODUCn : 2 : 200G - OTSi; ODUCn : 1 : 400G

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolQualifier	LayerProtocolQualifier	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
numberOfCepInstances	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			
capacity	CapacityValue	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			

13.4.5 NepLayerProtocolCapability

Number of CEP instances at the layer protocol qualifier.

Attribute Name	Type	Mult.	Access	Stereotypes
layerProtocolQualifier	LayerProtocolQualifier	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The layer protocol qualifier value.			
numberOfCepInstances	Integer	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description:			

Attribute Name	Type	Mult.	Access	Stereotypes	
	Description: The number of CEP instances.				

13.4.6 PortRole

The role of a (conceptual) port in the context of the Connection spec referenced in the rule.

Attribute Name	Type	Mult.	Access	Stereotypes
roleName	String Description: The name of the role of the CEP (associated to the conceptual port) of the Connection.	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

13.4.7 PortRoleRule

Constrains which (conceptual) port roles the rule applies to.

Attribute Name	Type	Mult.	Access	Stereotypes
portRole	PortRole Description: The role(s) of the port(s) considered in the rule.	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA
portRoleRule	PortRoleRuleOption Description: Where the rule references more than one (conceptual) port role or where there are rule intersections either as a result of overlay of rules or InterRuleGroup usage indicates role matching criteria for a Connection following the rules. For example if two port roles, "a" and "b", are listed and the port role rule is "different", this means that a Connection connecting CEPs in that group must have port roles that are different for each CEP in that group. In the example if a Connection can have n ports of role "a" and m ports of role "b" then a maximum of two ports can be drawn from the NEPs of the group and where there are two, one must be role "a" and one must be role "b".	0..*	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

13.4.8 ResilienceType

The type of resiliency (protection/restoration).

Attribute Name	Type	Mult.	Access	Stereotypes
restorationPolicy	RestorationPolicy Description: The number of CEP instances.	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY • OpenInterfaceModelAttribute • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: The restoration policy.			
protectionType	ProtectionType	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The protection type.			

13.4.9 RiskCharacteristic

The information for a particular risk characteristic where there is a list of risk identifiers related to that characteristic.

Attribute Name	Type	Mult.	Access	Stereotypes
riskCharacteristicName	String	1	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The name of the risk characteristic. The characteristic may be related to a specific degree of closeness. For example a particular characteristic may apply to failures that are localized (e.g. to one side of a road) where as another characteristic may relate to failures that have a broader impact (e.g. both sides of a road that crosses a bridge). Depending upon the importance of the traffic being routed different risk characteristics will be evaluated.			
riskIdentifierList	String	1..*	RW	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: A list of the identifiers of each physical/geographic unit (with the specific risk characteristic) that is related to a segment of the topological entity.			

13.4.10 SignalPropertyRule

Rule related to an identified signal property.

Attribute Name	Type	Mult.	Access	Stereotypes
signalPropertyName	String	1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA
	Description: The name of the signal property to which the rule applies.			
signalPropertyValueRule	SignalPropertyValueRule	0..1	R	OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Indicates how the signal properties should be accounted for.			
applicableSignalValue	String	0..*	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Specific values of the signal property to which the rule applies.			
numberOfSignalValues	Integer	0..1	R	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: The number of instances of this specific property that can be supported by the group.			

13.4.11 ValidationMechanism

Identifies the validation mechanism and describes the characteristics of that mechanism.

Attribute Name	Type	Mult.	Access	Stereotypes
	Description: Name of mechanism used to validate adjacency.			
validationMechanism	String	1	RW	OpenModelAttribute • isKey: yes – part: 1 • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: State of validation.			
layerProtocolAdjacencyValidated	String	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Quality of validation (i.e. how likely is the stated validation to be invalid).			
validationRobustness	String	1	RW	OpenModelAttribute • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY OpenInterfaceModelAttribute • AVC: NA
	Description: Quality of validation (i.e. how likely is the stated validation to be invalid).			

13.5 Enumerations

13.5.1 ForwardingRule

Rule that restricts the creation/deletion of a Connection between points referenced by rule groups.

Contains Enumeration Literals:

- MAY_FORWARD_ACROSS_GROUP:
 - NEPs referenced by the NodeRuleGroup (or indirectly by the InterRuleGroup between NodeRuleGroups) may have Connections created between them unless some other rule overrides this. For an InterRuleGroup points in a NodeRuleGroup at one end of the InterRuleGroup may be connected to points in a NodeRuleGroup at another end of the InterRuleGroup.
- MUST_FORWARD_ACROSS_GROUP:
 - NEPs referenced by the NodeRuleGroup (or indirectly by the InterRuleGroup between NodeRuleGroups) MUST have Connections created between them unless some other rule overrides this. For an InterRuleGroup points in a NodeRuleGroup at one end of the InterRuleGroup MUST be connected to points in a NodeRuleGroup at another end of the InterRuleGroup.
- CANNOT_FORWARD_ACROSS_GROUP:
 - NEPs referenced by the NodeRuleGroup (or indirectly by the InterRuleGroup between NodeRuleGroups) MUST NOT have Connections created between them. For an InterRuleGroup points in a NodeRuleGroup at one end of the InterRuleGroup MUST NOT be connected to points in an NodeRuleGroup at another end of the InterRuleGroup.
- NO_STATEMENT_ON_FORWARDING:
 - The rule group makes no statement on forwarding.
- INTER_CONNECTION_CONTENTION:
 - Connections to NEPs in the Rule Group contend for resources based upon a constraint of some signal property. For example, each Connection to a NEP in the Group must use a different value of the signal property from all other Connections to NEPs in the Rule Group. For example, each Connection to a NEP in the Group must use a same value of the signal property as all other Connections to NEPs in the Rule Group. In this case the first Connection created in the Rule Group sets the value and the Group constraint is freed when the last Connection is deleted.

13.5.2 PortRoleRuleOption

Indicates how to interpret the port role list.

Contains Enumeration Literals:

- SAME_ROLE:
 - The (conceptual) ports of the Connection to which the rule applies must have the same role from the list in port role.
- DIFFERENT_ROLE:
 - The (conceptual) ports of the Connection to which the rule applies must have different roles from the list in port role.
- ANY_ROLE:
 - The (conceptual) ports of the Connection to which the rule applies may take any identified role.
- NOT_ROLE:
 - The (conceptual) ports of the Connection to which the rule applies must not have any of the listed roles.

13.5.3 ProtectionType

The types of protection and restoration.

Contains Enumeration Literals:

- NO_PROTECTION:
- ONE_PLUS_ONE_PROTECTION:

- Protection scheme where the switches are not required to be coordinated (typically the signal is always bridged).
- ONE_PLUS_ONE_PROTECTION_WITH_DYNAMIC_RESTORATION:
 - Protection scheme where the switches are not required to be coordinated (typically the signal is always bridged). In addition a new protection route is dynamically computed and implemented to restore resiliency level (e.g. when a failure affects previously working route).
- PERMANENT_ONE_PLUS_ONE_PROTECTION:
 - Non-revertive scheme, a route which is impaired (by a failure or maintenance command) is forgotten. If the current route fails, the control plane will commute to a protection route. The role, or priority of this route changes from protected to working and the control plane will compute and provision a new protection route. If the protection route fails, the control plane will compute and restore it through a new protection route.
- ONE_FOR_ONE_PROTECTION:
 - Protection scheme where the switches are coordinated (e.g. by signalling).
- DYNAMIC_RESTORATION:
 - Restoration scheme where the protection route is computed and implemented only when the current (and only) route is impaired (e.g. by a failure or maintenance command).
- PRE_COMPUTED_RESTORATION:
 - Restoration scheme where the protection route is pre-computed. When the current (and only) route is impaired (e.g. by a failure or maintenance command) the pre-computed route is implemented.
- ONE_PLUS_ONE_PROTECTION_WITH_PRE_COMPUTED_RESTORATION:
 - Protection scheme where the switches are not required to be coordinated (typically the signal is always bridged). In addition a further protection route is pre-computed. When either the current or protection route is impaired (e.g. by a failure or maintenance command), the pre-computed route is implemented to restore resiliency level.
- ONE_FOR_N_PROTECTION:
 - N routes share one protection route. Switches need coordination (e.g. by signalling).
- M_FOR_N_PROTECTION:
 - N routes share M protection routes. Switches need coordination (e.g. by signalling).
- ONE_FOR_ONE_BY_N:
 - N parallel one-for-one schemes.

13.5.4 RestorationPolicy

The restoration policy.

Contains Enumeration Literals:

- PER_DOMAIN_RESTORATION:
 - Restoration is expected to be performed independently within each (restoration) domain scope.
- END_TO_END_RESTORATION:
 - Restoration is expected to be performed on end to end basis across all domain(s).
- NA:
 - Not Applicable.

13.5.5 RuleType

The focus of the rule.

Contains Enumeration Literals:

- FORWARDING:
 - The rule applies to the creation of Connections.

- CAPACITY:
 - The rule applies to capacity limitations.
- COST:
 - The rule applies to the cost of the creation of Connections.
- TIMING:
 - The rule applies to timing constraints across the group.
- RISK:
 - The rule applies to risk considerations across the group so as to express shared risk.
- GROUPING:
 - The rule is simply for grouping related to other rules.

13.5.6 SignalPropertyValueRule

Indicates how to interpret the signal property value rule.

Contains Enumeration Literals:

- SAME_VALUE:
 - The signal property of the CEP to which the rule applies must have the same value from the identified list.
- ANY_VALUE:
 - The signal property of the CEP to which the rule applies may take any identified value.
- DIFFERENT_VALUE:
 - The signal property of the CEP to which the rule applies each must have different values from the identified list.
- NOT_VALUE:
 - The signal property of the CEP to which the rule applies must not have any of the identified values.

13.5.7 TopologyObjectType

The list of TAPI Topology Global Object Class types on which Notification signals can be raised.

Contains Enumeration Literals:

- TOPOLOGY:
 - The Topology class.
- NODE:
 - The Node class.
- LINK:
 - The Link class.
- NODE_EDGE_POINT:
 - The NodeEdgePoint (NEP) class.
- NODE_RULE_GROUP:
 - The NodeRuleGroup class.
- INTER_RULE_GROUP:
 - The InterRuleGroup class.
- RULE:
 - The Rule class.
- NETWORK_TOPOLOGY_SERVICE:
 - The NetworkTopologyService class.

13.6 Primitives

14 Virtual Network Model

TapiVirtualNetwork: This module contains TAPI Virtual Network Model definitions. Source: TapiVirtualNetwork.uml Copyright (c) 2021 Open Networking Foundation (ONF). All rights reserved. License: This module is distributed under the Apache License 2.0

14.1 Diagrams

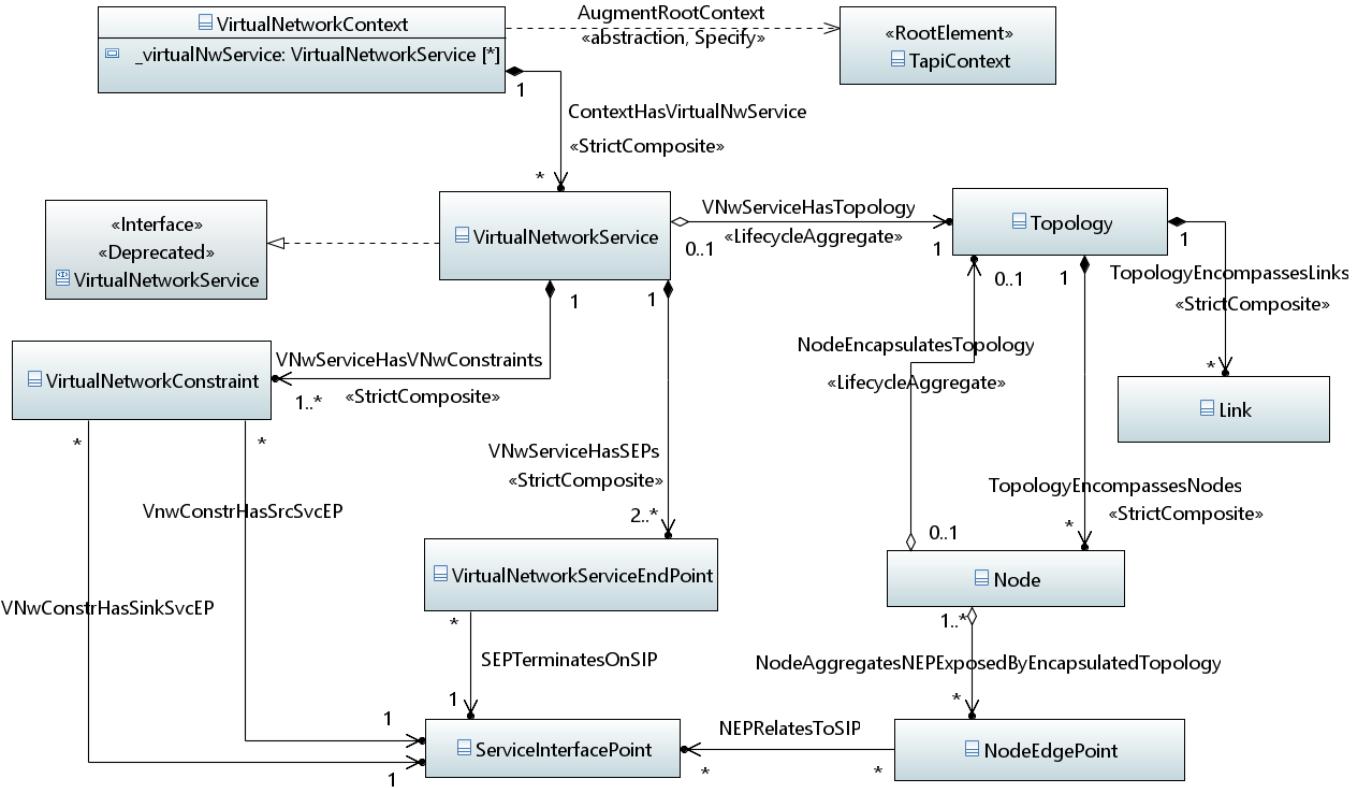


Figure 57 – VirtualNetworkService

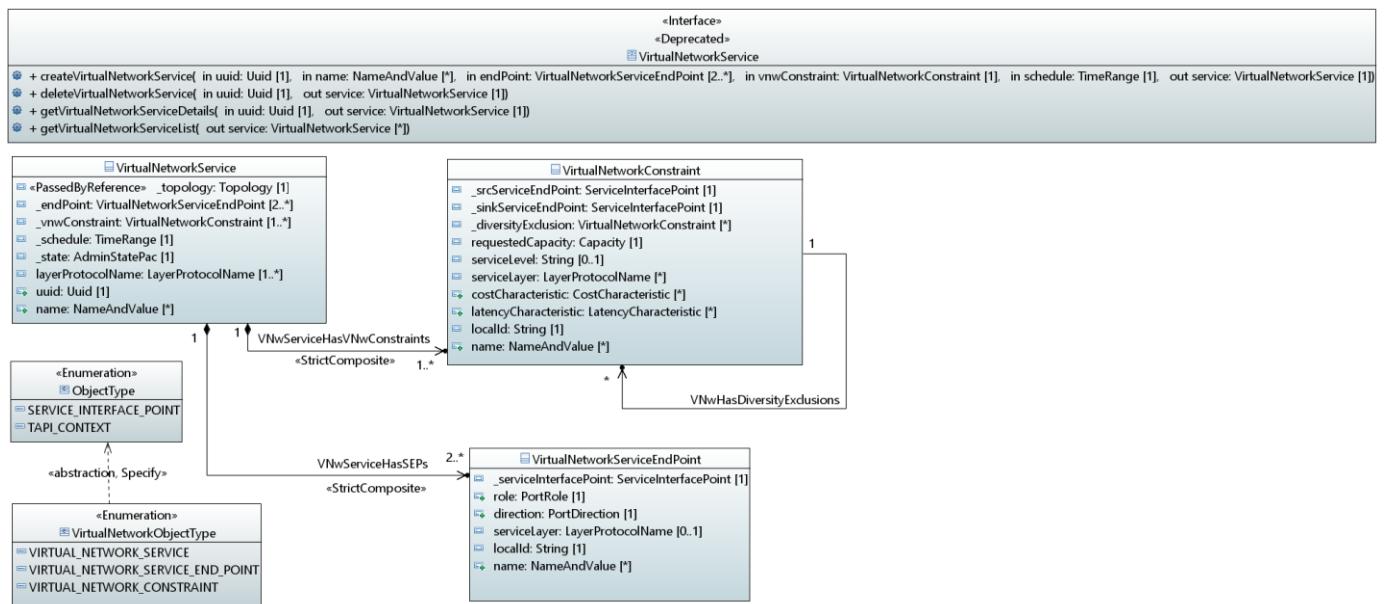


Figure 58 – VirtualNwDetails

14.2 Classes

14.2.1 VirtualNetworkConstraint

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_srcServiceEndPoint	ServiceInterfacePoint	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
_sinkServiceEndPoint	ServiceInterfacePoint	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
_diversityExclusion	VirtualNetworkConstraint	0..*	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
requestedCapacity	Capacity	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
serviceLevel	String	0..1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
	Description:			
	An abstract value the meaning of which is mutually agreed – typically represents metrics such as - Class of service, priority, resiliency, availability			

Attribute Name	Type	Mult.	Access	Stereotypes
serviceLayer	LayerProtocolName	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
costCharacteristic	CostCharacteristic	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The list of costs where each cost relates to some aspect of the TopologicalEntity.				
latencyCharacteristic	LatencyCharacteristic	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The effect on the latency of a queuing process. This only has significant effect for packet based systems and has a complex characteristic.				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

14.2.2 VirtualNetworkContext

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_virtualNwService	VirtualNetworkService	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

14.2.3 VirtualNetworkService

The ForwardingConstruct (FC) object class models enabled potential for forwarding between two or more LTPs and like the LTP supports any transport protocol including all circuit and packet forms. At the lowest level of recursion, a FC represents a cross-connection within an NE.

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_topology	Topology	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY PassedByReference
_endPoint	VirtualNetworkServiceEndPoint	2..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
_vnwConstraint	VirtualNetworkConstraint	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
_schedule	TimeRange	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY

Attribute Name	Type	Mult.	Access	Stereotypes
_state	AdminStatePac	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
layerProtocolName	LayerProtocolName	1..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
uuid	Uuid	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: yes – part: 1 isInvariant: true valueRange: no range constraint support: MANDATORY
Description:				
UUID: An identifier that is universally unique within an identifier space, where the identifier space is itself globally unique, and immutable. An UUID carries no semantics with respect to the purpose or state of the entity. UUID here uses string representation as defined in RFC 4122. The canonical representation uses lowercase characters. Pattern: [0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> AVC: NA OpenModelAttribute <ul style="list-style-type: none"> isKey: No isInvariant: false valueRange: no range constraint support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

14.2.4 VirtualNetworkServiceEndPoint

The association of the FC to LTPs is made via EndPoints. The EndPoint (EP) object class models the access to the FC function. The traffic forwarding between the associated EPs of the FC depends upon the type of FC and may be associated with FcSwitch object instances. In cases where there is resilience the EndPoint may convey the resilience role of the access to the FC. It can represent a protected (resilient/reliable) point or a protecting (unreliable working or protection) point. The EP replaces the Protection Unit of a traditional protection model. The ForwardingConstruct can be considered as a component and the EndPoint as a Port on that component

Applied stereotypes:

- OpenModelClass
 - support: MANDATORY
- OpenInterfaceModelClass
 - objectCreationNotification: NA
 - objectDeletionNotification: NA

Attribute Name	Type	Mult.	Access	Stereotypes
_serviceInterfacePoint	ServiceInterfacePoint	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
role	PortRole	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The role of the (conceptual) port of the associated VirtualNetworkService.				
direction	PortDirection	1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
The orientation of flow at the (conceptual) port of the associated VirtualNetworkService.				
serviceLayer	LayerProtocolName	0..1	R	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
localId	String	1	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: yes – part: 1 • isInvariant: true • valueRange: no range constraint • support: MANDATORY
Description:				
An identifier that is unique in the context of the GlobalClass from which it is inseparable.				
name	NameAndValue	0..*	RW	OpenInterfaceModelAttribute <ul style="list-style-type: none"> • AVC: NA OpenModelAttribute <ul style="list-style-type: none"> • isKey: No • isInvariant: false • valueRange: no range constraint • support: MANDATORY
Description:				
List of names. This value is unique in some namespace but may change during the life of the entity. A name carries no semantics with respect to the purpose of the entity.				

14.3 Associations

14.3.1 ContextHasVirtualNwService

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_virtualNwService	composite	Yes	VirtualNetworkService	0..*
_virtualnetworkcontext	none	No	VirtualNetworkContext	1

14.3.2 SEPTerminatesOnSIP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_serviceInterfacePoint	none	Yes	ServiceInterfacePoint	1
_vnwServicePort	none	No	VirtualNetworkServiceEndPoint	0..*

14.3.3 VNwConstrHasSinkSvcEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_sinkServiceEndPoint	none	Yes	ServiceInterfacePoint	1
_virtualnetworkconstraint	none	No	VirtualNetworkConstraint	0..*

14.3.4 VNwHasDiversityExclusions

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_diversityExclusion	none	Yes	VirtualNetworkConstraint	0..*
_vnwConstraint	none	No	VirtualNetworkConstraint	1

14.3.5 VNwServiceHasSEPs

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_endPoint	composite	Yes	VirtualNetworkServiceEndPoint	2..*
_service	none	No	VirtualNetworkService	1

14.3.6 VNwServiceHasTopology

Applied stereotypes:

- LifecycleAggregate

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_topology	shared	Yes	Topology	1
_vnwService	none	No	VirtualNetworkService	0..1

14.3.7 VNwServiceHasVNwConstraints

Applied stereotypes:

- StrictComposite

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_vnwConstraint	composite	Yes	VirtualNetworkConstraint	1..*
_service	none	No	VirtualNetworkService	1

14.3.8 VnwConstrHasSrcSvcEP

Applied stereotypes:

Association end role name	Aggregation type	Navigable	Target Class	Mult.
_srcServiceEndPoint	none	Yes	ServiceInterfacePoint	1
virtualnetworkconstraint	none	No	VirtualNetworkConstraint	0..*

14.4 Data Types

14.5 Enumerations

14.5.1 VirtualNetworkObjectType

The list of TAPI Virtual Network Object types/classes.

Contains Enumeration Literals:

- VIRTUAL_NETWORK_SERVICE;
- VIRTUAL_NETWORK_SERVICE_END_POINT;
- VIRTUAL_NETWORK_CONSTRAINT:
 - The VirtualNetworkConstraint class.

14.6 Primitives