

TAPI UML Model

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Document History

| **Version** | **Date** | **Description of Change** |
| --- | --- | --- |
| 2.3 | August 2021 | Model Dump of [ONF Transport API SDK 2.3](https://github.com/OpenNetworkingFoundation/TAPI/releases/tag/v2.3) |
| 2.4.0 | January 2023 | Model Dump of [ONF Transport API SDK 2.4.0](https://github.com/OpenNetworkingFoundation/TAPI/releases/tag/v2.4.0) |

*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).

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).

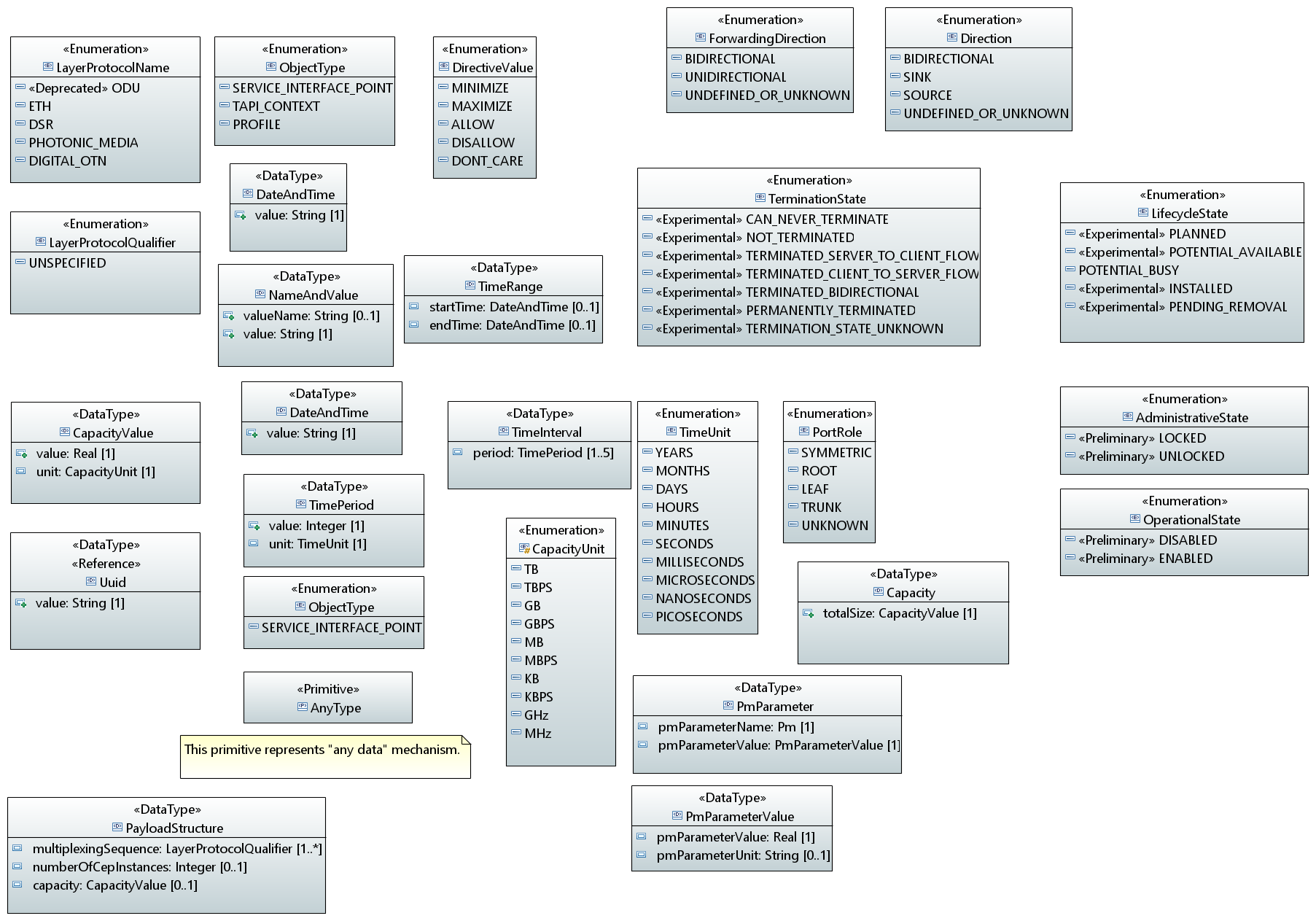
In some diagrams the attributes representing an association end (the ones with underscore prefix, e.g. *lowerConnection*) are not shown for graphical reasons.

A paragraph is empty when the model does not include that UML element, e.g. Fault Management Model does not foresee *data types*.

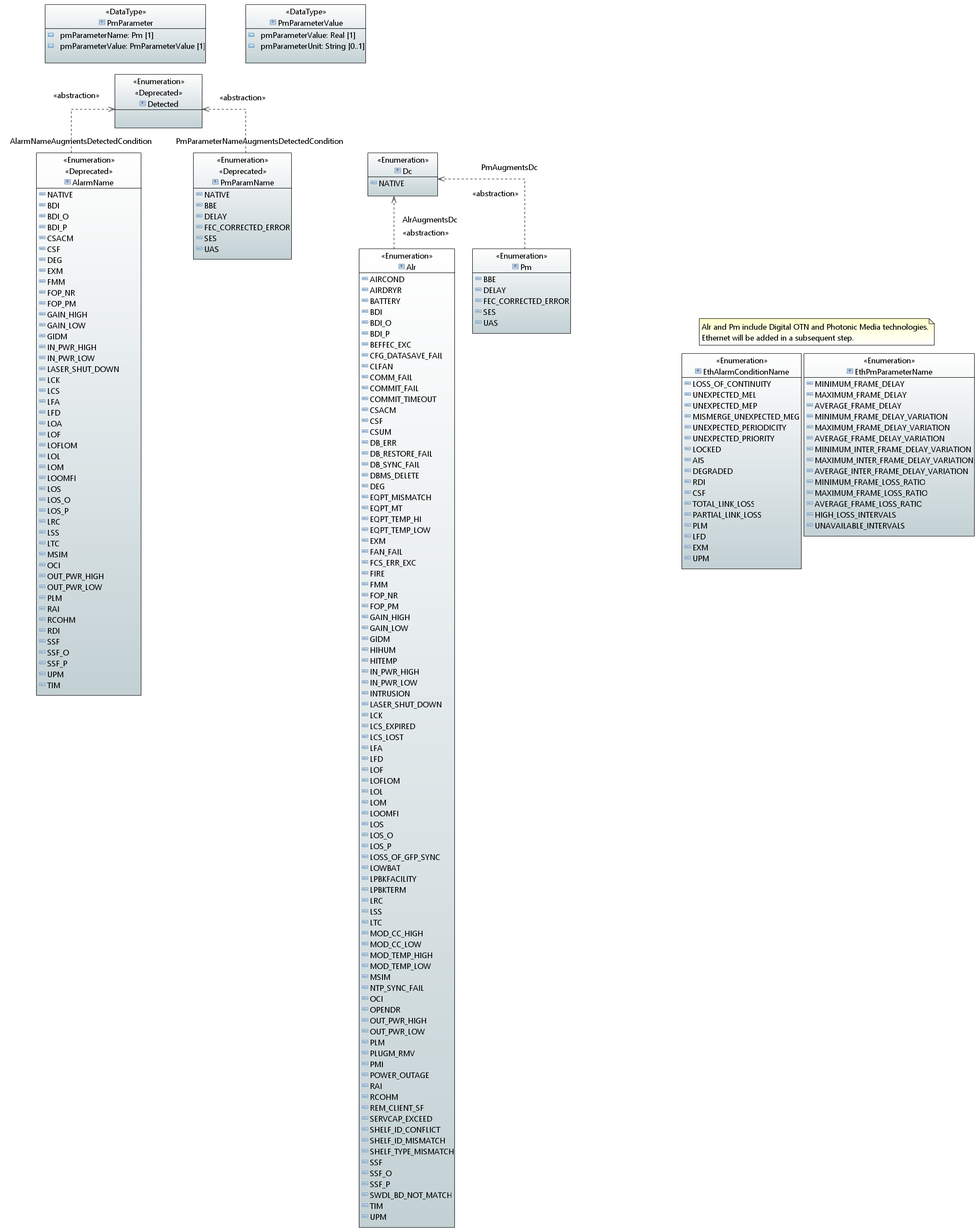
# Common Model

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

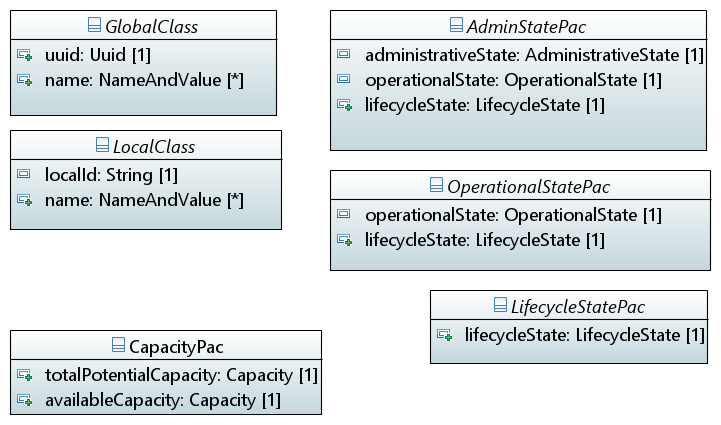
## Diagrams



**Figure 1 – Diagram *CommonDataTypes***

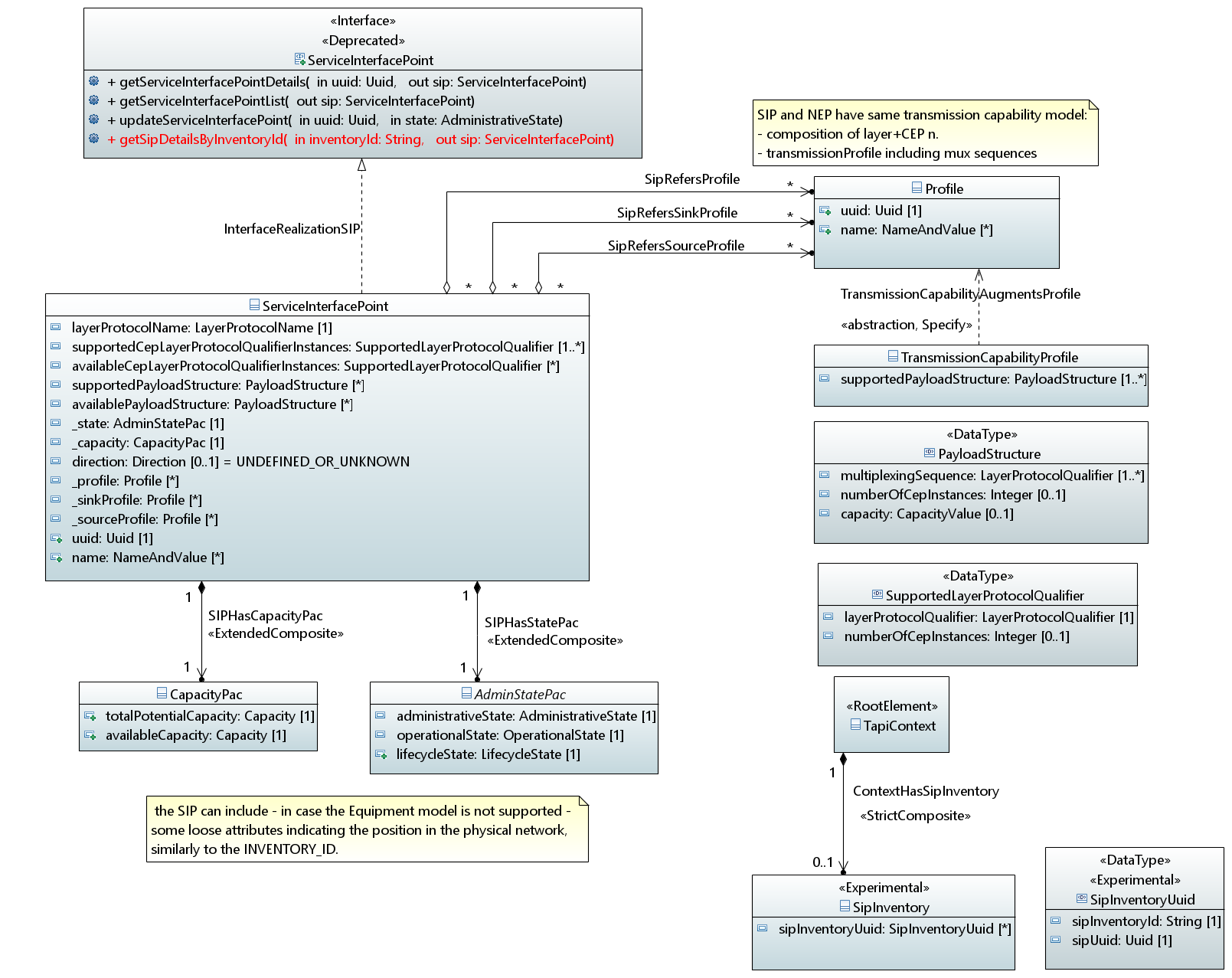


**Figure 2 – Diagram *CommonOamFmTypes***



**Figure 3 – Diagram *CommonPacs***

**Figure 4 – Diagram *Context***



**Figure 5 – Diagram *ServicePointDetails***

## Classes

### AdminStatePac

Description:

* 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| operationalState | OperationalState | 1 | R | OpenModelAttribute   * 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   * 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. | | | |

**Table 1 – Attributes for class *AdminStatePac***

### CapacityPac

Description:

* 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Capacity available to be assigned. | | | |

**Table 2 – Attributes for class *CapacityPac***

### GlobalClass

Description:

* 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   * 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   * 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. | | | |

**Table 3 – Attributes for class *GlobalClass***

### LifecycleStatePac

Description:

* 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   * 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. | | | |

**Table 4 – Attributes for class *LifecycleStatePac***

### LocalClass

Description:

* 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   * 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. | | | |

**Table 5 – Attributes for class *LocalClass***

### OperationalStatePac

Description:

* 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   * 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   * 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. | | | |

**Table 6 – Attributes for class *OperationalStatePac***

### Profile

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 7 – Attributes for class *Profile***

### ServiceInterfacePoint

Description:

* 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The layer protocol of the ServiceInterfacePoint (SIP). Usage of layerProtocolName [>1] in the ServiceInterfacePoint should be considered experimental. | | | |
| supportedCepLayerProtocolQualifierInstances | SupportedLayerProtocolQualifier | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The supported sub-layer(s) or rate(s) of Layer Protocol. | | | |
| availableCepLayerProtocolQualifierInstances | SupportedLayerProtocolQualifier | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| supportedPayloadStructure | PayloadStructure | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| availablePayloadStructure | PayloadStructure | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_state | AdminStatePac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The ServiceInterfacePoint (SIP) status information. | | | |
| \_capacity | CapacityPac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The ServiceInterfacePoint (SIP) capacity information. | | | |
| direction | Direction  Default value: *UNDEFINED\_OR\_UNKNOWN* | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The SIP direction. It is intended the "internal viewpoint", i.e. the source SIP is sending to the network, the sink SIP is sending from the network. If direction attribute is missing the ServiceInterfacePoint (SIP) instance is to be intended as "BIDIRECTIONAL". | | | |
| \_profile | Profile | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sinkProfile | Profile | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sourceProfile | Profile | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 8 – Attributes for class *ServiceInterfacePoint***

### SipInventory

Description:

* Table for the mapping between UUID and Inventory Id of SIPs.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sipInventoryUuid | SipInventoryUuid | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Table for the mapping between UUID and Inventory Id of SIPs. | | | |

**Table 9 – Attributes for class *SipInventory***

### TapiContext

Description:

* 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:

* OpenModelClass
* support: MANDATORY
* RootElement
* name: invalid
* multiplicity: invalid
* description: invalid
* 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. | | | |
| \_profile | Profile | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sipInventory | SipInventory | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Table for the mapping between UUID and Inventory Id of SIPs. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 10 – Attributes for class *TapiContext***

### TransmissionCapabilityProfile

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| supportedPayloadStructure | PayloadStructure | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Description of (potential) capability. | | | |

**Table 11 – Attributes for class *TransmissionCapabilityProfile***

## Signals

## Associations

### ContextHasProfiles

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | composite | Yes | Profile | 0..\* |
| tapicontext | none | No | TapiContext | 1 |

**Table 12 – Member ends for association *ContextHasProfiles***

### ContextHasSIPs

Applied stereotypes:

* StrictComposite

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

**Table 13 – Member ends for association *ContextHasSIPs***

### ContextHasSipInventory

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sipInventory | composite | Yes | SipInventory | 0..1 |
| tapicontext | none | No | TapiContext | 1 |

**Table 14 – Member ends for association *ContextHasSipInventory***

### SIPHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_capacity | composite | Yes | CapacityPac | 1 |
| serviceinterfacepoint | none | No | ServiceInterfacePoint | 1 |

**Table 15 – Member ends for association *SIPHasCapacityPac***

### SIPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| \_serviceEndPoint | none | No | ServiceInterfacePoint | 1 |

**Table 16 – Member ends for association *SIPHasStatePac***

### SipRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| serviceinterfacepoint | none | No | ServiceInterfacePoint | 0..\* |

**Table 17 – Member ends for association *SipRefersProfile***

### SipRefersSinkProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkProfile | shared | Yes | Profile | 0..\* |
| serviceinterfacepoint | none | No | ServiceInterfacePoint | 0..\* |

**Table 18 – Member ends for association *SipRefersSinkProfile***

### SipRefersSourceProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sourceProfile | shared | Yes | Profile | 0..\* |
| serviceinterfacepoint | none | No | ServiceInterfacePoint | 0..\* |

**Table 19 – Member ends for association *SipRefersSourceProfile***

## Abstractions

### AlarmNameAugmentsDetectedCondition

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| AlarmName   * FOP\_NR * LOFLOM * SSF\_P * BDI\_O * CSF * MSIM * PLM * OUT\_PWR\_LOW * RCOHM * CSACM * BDI\_P * LOF * SSF\_O * LOA * RDI * UPM * IN\_PWR\_LOW * EXM * LSS * LFD * GAIN\_HIGH * LOS * GAIN\_LOW * DEG * LOS\_P * FOP\_PM * LFA * IN\_PWR\_HIGH * LCK * RAI * SSF * LCS * LRC * LTC * LOS\_O * TIM * OCI * LOL * OUT\_PWR\_HIGH * BDI * FMM * LASER\_SHUT\_DOWN * LOM * GIDM * NATIVE * LOOMFI | Detected |
| **Comment**  Enumeration Augment. | |

**Table 20 – Member ends for enum abstraction *AlarmNameAugmentsDetectedCondition***

### AlrAugmentsDc

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| Alr   * INTRUSION * POWER\_OUTAGE * FIRE * EQPT\_MISMATCH * FCS\_ERR\_EXC * LOS * OPENDR * IN\_PWR\_LOW * LOL * OCI * LPBKFACILITY * MOD\_CC\_HIGH * DEG * LCS * BDI\_P * CFG\_DATASAVE\_FAIL * PLUGM\_RMV * EQPT\_TEMP\_LOW * SHELF\_ID\_CONFLICT * CSACM * SWDL\_BD\_NOT\_MATCH * HITEMP * PLM * LOWBAT * SHELF\_TYPE\_MISMATCH * BEFFEC\_EXC * OUT\_PWR\_HIGH * HIHUM * EQPT\_MT * LCK * COMMIT\_TIMEOUT * CSUM * AIRCOND * LOF * MSIM * OUT\_PWR\_LOW * GAIN\_HIGH * EQPT\_TEMP\_HI * SHELF\_ID\_MISMATCH * COMMIT\_FAIL * FOP\_PM * LTC * AIRDRYR * BDI * NTP\_SYNC\_FAIL * LFD * REM\_CLIENT\_SF * LFA * BDI\_O * LPBKTERM * DBMS\_DELETE * FMM * DB\_SYNC\_FAIL * LOFLOM * LOM * FOP\_NR * MOD\_TEMP\_HIGH * SSF\_P * LCS\_EXPIRED * MOD\_CC\_LOW * PMI * LOOMFI * LOS\_P * DB\_ERR * GIDM * LSS * PSU\_FAIL * RAI * CSF * LOSS\_OF\_GFP\_SYNC * CLFAN * GAIN\_LOW * MOD\_TEMP\_LOW * UPM * LOS\_O * SERVCAP\_EXCEED * SSF\_O * LRC * BATTERY * RCOHM * LASER\_SHUT\_DOWN * SSF * LCS\_LOST * COMM\_FAIL * IN\_PWR\_HIGH * TIM * DB\_RESTORE\_FAIL * EXM * FAN\_FAIL | Dc   * NATIVE |
| **Comment**  Enumeration Augment. | |

**Table 21 – Member ends for enum abstraction *AlrAugmentsDc***

### InterfaceRealizationSIP

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| ServiceInterfacePoint | ServiceInterfacePoint |
| **Comment**  The SIP Interface Realization. | |

**Table 22 – Member ends for enum abstraction *InterfaceRealizationSIP***

### PmAugmentsDc

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| Pm   * DELAY * SES * FEC\_CORRECTED\_ERROR * BBE * UAS | Dc   * NATIVE |
| **Comment**  Enumeration Augment. | |

**Table 23 – Member ends for enum abstraction *PmAugmentsDc***

### PmParameterNameAugmentsDetectedCondition

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| PmParamName   * NATIVE * DELAY * BBE * FEC\_CORRECTED\_ERROR * SES * UAS | Detected |
| **Comment**  Enumeration Augment. | |

**Table 24 – Member ends for enum abstraction *PmParameterNameAugmentsDetectedCondition***

### TransmissionCapabilityAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| TransmissionCapabilityProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 25 – Member ends for class abstraction *TransmissionCapabilityAugmentsProfile***

## Data Types

### Capacity

Description:

* 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. | | | |

**Table 26 – Attributes for data type *Capacity***

### CapacityValue

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| value | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The specific value of the capacity. | | | |
| unit | CapacityUnit | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The specific unit of measurement of the capacity. | | | |

**Table 27 – Attributes for data type *CapacityValue***

### DateAndTime

Description:

* 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The specific value of the date and time. | | | |

**Table 28 – Attributes for data type *DateAndTime***

### NameAndValue

Description:

* A scoped name-value pair.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| valueName | String | 0..1 | RW | OpenModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The specific value. | | | |

**Table 29 – Attributes for data type *NameAndValue***

### PayloadStructure

Description:

* 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] - ODU2; ODU4; ODUCn: 10 [mult. for n] - ODU2; ODU3: ODU4; ODUCn: 8 [mult. for n] - ODU3; ODU4; ODUCn: 2 [mult. for n] - OTSiMC; MC; OMS; OTS : 80 : 50G - ODUCn; OTSiMC : 2 : 200G - ODUCn; OTSiMC : 1 : 400G In each sequence, the first entry indicates the upper most client (non-terminated) CEP, the rest of entries indicate the server terminated CEPs (forming the mux path).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| multiplexingSequence | LayerProtocolQualifier | 1..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  List of layer protocol qualifiers composing the multiplexing sequence. | | | |
| numberOfCepInstances | Integer | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The maximum number of uppermost client CEPs (non-terminated). This relates to the first entry of the mux sequence. | | | |
| capacity | CapacityValue | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The maximum capacity of the multiplexing sequence. E.g. in case of ODUFlex. | | | |

**Table 30 – Attributes for data type *PayloadStructure***

### PmParameter

Description:

* PM metric name and value.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| pmParameterName | Pm | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The name of the PM metric. Technology specific modules may define specific PM metrics. | | | |
| pmParameterValue | PmParameterValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The value of the PM metric. | | | |

**Table 31 – Attributes for data type *PmParameter***

### PmParameterValue

Description:

* PM metric value.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| pmParameterValue | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The PM Parameter value. The type Real allows the representation of e.g. either gauges or counters. | | | |
| pmParameterUnit | String | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The PM Parameter unit. | | | |

**Table 32 – Attributes for data type *PmParameterValue***

### SipInventoryUuid

Description:

* Each entry provides the mapping between the UUID and the Inventory Id of a SIP instance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sipInventoryId | String | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Inventory ID of the SIP. | | | |
| sipUuid | Uuid | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  UUID of the SIP. | | | |

**Table 33 – Attributes for data type *SipInventoryUuid***

### SupportedLayerProtocolQualifier

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| numberOfCepInstances | Integer | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Number of CEP instances at the layer protocol qualifier. | | | |

**Table 34 – Attributes for data type *SupportedLayerProtocolQualifier***

### TimeInterval

Description:

* 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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 | | | |

**Table 35 – Attributes for data type *TimeInterval***

### TimePeriod

Description:

* Period of time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 time period. | | | |
| unit | TimeUnit | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The unit of measurement of the time period. | | | |

**Table 36 – Attributes for data type *TimePeriod***

### TimeRange

Description:

* Range of time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| startTime | DateAndTime | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Date and time of the range start. | | | |
| endTime | DateAndTime | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Date and time of the range end. | | | |

**Table 37 – Attributes for data type *TimeRange***

### Uuid

Description:

* The univeral 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 |
| **Description:**  The specific value of the universal id. | | | |

**Table 38 – Attributes for data type *Uuid***

## Enumerations

### AdministrativeState

Description:

* 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.

### AlarmName

Description:

* The alarm condition name, or alarm probable cause.

Contains Enumeration Literals:

* NATIVE:
  + This value indicates an Alarm Condition not standardized by this model and specified only in native info attribute.
* BDI:
  + G.798: Backward defect indication.
* BDI\_O:
  + G.798: Backward defect indication overhead.
* BDI\_P:
  + G.798: Backward defect indication payload.
* CSACM:
  + G.798: Calendar Slot Availability Count Mismatch.
* CSF:
  + G.798: Client signal fail.
* DEG:
  + G.798, G.806: Signal degrade.
* 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.
* FMM:
  + G.798: FlexO/FlexE Map Mismatch.
* FOP\_NR:
  + G.798: ODU linear protection failure of protocol no response.
* FOP\_PM:
  + G.798: ODU linear protection failure of protocol provisioning mismatch.
* GAIN\_HIGH:
* GAIN\_LOW:
* GIDM:
  + G.798: Group ID Mismatch.
* IN\_PWR\_HIGH:
* IN\_PWR\_LOW:
* LASER\_SHUT\_DOWN:
* LCK:
  + G.798: Locked.
* LCS:
  + G.798, IEEE 802.3, G.709: Loss of character synchronization.
* LFA:
  + G.798: Loss of FEC word alignment.
* 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.
* LOA:
  + G.798: Loss of alignment.
* LOF:
  + G.798, G.783: Loss Of Frame.
* LOFLOM:
  + G.798: Loss of frame and multiframe - tributary port #p
* LOL:
  + G.798: Loss of lane alignment.
* LOM:
  + G.798: Loss of multiframe. Loss of the interleaved FlexESG multi-frame.
* LOOMFI:
  + G.798: OPU multiframe (OMFI) reception for OPUk with k = 4
* LOS:
  + G.783: Loss Of Signal.
* LOS\_O:
  + G.798: Loss of signal overhead.
* LOS\_P:
  + G.798: Loss of signal information from the media element. Loss of optical signal.
* LRC:
  + G.798: Loss of Rate Compensation blocks.
* LSS:
  + G.798, O.151: Loss of PRBS lock.
* LTC:
  + G.798: Loss of tandem connection.
* MSIM:
  + G.798: Multiplex structure identifier mismatch supervision - tributary port #p
* OCI:
  + G.798: Open connection indication.
* OUT\_PWR\_HIGH:
* OUT\_PWR\_LOW:
* 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.
* RAI:
* RCOHM:
  + G.798: Resize Control Overhead Mismatch.
* RDI:
  + G.798: Remote Defect Indication.
* SSF:
  + Server Signal Fail.
* SSF\_O:
  + Server Signal Fail Overhead.
* SSF\_P:
  + Server Signal Fail Payload.
* 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.
* TIM:
  + G.798: Connectivity supervision/trail trace identifier mismatch.

### Alr

Contains Enumeration Literals:

* AIRCOND:
* AIRDRYR:
* BATTERY:
* BDI:
  + G.798: Backward defect indication.
* BDI\_O:
  + G.798: Backward defect indication overhead.
* BDI\_P:
  + G.798: Backward defect indication payload.
* BEFFEC\_EXC:
* CFG\_DATASAVE\_FAIL:
* CLFAN:
* COMM\_FAIL:
* COMMIT\_FAIL:
* COMMIT\_TIMEOUT:
* CSACM:
  + G.798: Calendar Slot Availability Count Mismatch.
* CSF:
  + G.798: Client signal fail.
* CSUM:
* DB\_ERR:
* DB\_RESTORE\_FAIL:
* DB\_SYNC\_FAIL:
* DBMS\_DELETE:
* DEG:
  + G.798, G.806: Signal degrade.
* EQPT\_MISMATCH:
* EQPT\_MT:
* EQPT\_TEMP\_HI:
* EQPT\_TEMP\_LOW:
* 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.
* FAN\_FAIL:
* FCS\_ERR\_EXC:
* FIRE:
* FMM:
  + G.798: FlexO/FlexE Map Mismatch.
* FOP\_NR:
  + G.798: ODU linear protection failure of protocol no response.
* FOP\_PM:
  + G.798: ODU linear protection failure of protocol provisioning mismatch.
* GAIN\_HIGH:
* GAIN\_LOW:
* GIDM:
  + G.798: Group ID Mismatch.
* HIHUM:
* HITEMP:
* IN\_PWR\_HIGH:
* IN\_PWR\_LOW:
* INTRUSION:
* LASER\_SHUT\_DOWN:
* LCK:
  + G.798: Locked.
* LCS:
  + G.798, IEEE 802.3, G.709: Loss of character synchronization.
* LCS\_EXPIRED:
* LCS\_LOST:
* LFA:
  + G.798: Loss of FEC word alignment.
* 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.
* LOF:
  + G.798, G.783: Loss Of Frame.
* LOFLOM:
  + G.798: Loss of frame and multiframe - tributary port #p
* LOL:
  + G.798: Loss of lane alignment.
* LOM:
  + G.798: Loss of multiframe. Loss of the interleaved FlexESG multi-frame.
* LOOMFI:
  + G.798: OPU multiframe (OMFI) reception for OPUk with k = 4
* LOS:
  + G.783: Loss Of Signal.
* LOS\_O:
  + G.798: Loss of signal overhead.
* LOS\_P:
  + G.798: Loss of signal information from the media element. Loss of optical signal.
* LOSS\_OF\_GFP\_SYNC:
* LOWBAT:
* LPBKFACILITY:
* LPBKTERM:
* LRC:
  + G.798: Loss of Rate Compensation blocks.
* LSS:
  + G.798, O.151: Loss of PRBS lock.
* LTC:
  + G.798: Loss of tandem connection.
* MOD\_CC\_HIGH:
* MOD\_CC\_LOW:
* MOD\_TEMP\_HIGH:
* MOD\_TEMP\_LOW:
* MSIM:
  + G.798: Multiplex structure identifier mismatch supervision - tributary port #p
* NTP\_SYNC\_FAIL:
* OCI:
  + G.798: Open connection indication.
* OPENDR:
* OUT\_PWR\_HIGH:
* OUT\_PWR\_LOW:
* 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.
* PLUGM\_RMV:
* PMI:
* POWER\_OUTAGE:
* PSU\_FAIL:
* RAI:
* RCOHM:
  + G.798: Resize Control Overhead Mismatch.
* REM\_CLIENT\_SF:
* SERVCAP\_EXCEED:
* SHELF\_ID\_CONFLICT:
* SHELF\_ID\_MISMATCH:
* SHELF\_TYPE\_MISMATCH:
* SSF:
  + Server Signal Fail.
* SSF\_O:
  + Server Signal Fail Overhead.
* SSF\_P:
  + Server Signal Fail Payload.
* SWDL\_BD\_NOT\_MATCH:
* TIM:
  + G.798: Connectivity supervision/trail trace identifier mismatch.
* 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.

### CapacityUnit

Description:

* 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)
* THz:
  + Indicates that the integer CapacityValue is in terahertz (spectrum)
* Hz:
  + Indicates that the integer CapacityValue is in Hertz (spectrum)
* B:
  + Indicates that the integer CapacityValue is in bits
* KHz:
  + Indicates that the integer CapacityValue is in kilohertz (spectrum)
* BPS:
  + Indicates that the integer CapacityValue is in bit-per-second

### Dc

Contains Enumeration Literals:

* NATIVE:
  + This value indicates an Alarm Condition not standardized by this model and specified only in native info attribute.

### Detected

Description:

* The detected condition, name is shortened to simplify the concatenated identity.

Contains Enumeration Literals:

### Direction

Description:

* The directionality of an entity, e.g. CSEP, 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.
* SOURCE:
  + The flow is down the layer stack from the client side to the server side.
* UNDEFINED\_OR\_UNKNOWN:
  + Not a normal state. The system is unable to determine the correct value.

### DirectiveValue

Description:

* 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.

### 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.

### 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, 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.
* MAXIMUM\_FRAME\_DELAY\_VARIATION:
  + 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.
* AVERAGE\_FRAME\_DELAY\_VARIATION:
  + 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.
* MINIMUM\_INTER\_FRAME\_DELAY\_VARIATION:
  + 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
* 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:

### ForwardingDirection

Description:

* 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.

### LayerProtocolName

Description:

* 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

### LayerProtocolQualifier

Description:

* This enumeration is used to qualify the sub-layers (if applicable) for a specific LayerProtocol. This extensible enumeration can be augmented with layer-specific values in the respective technology-specific modules.

Contains Enumeration Literals:

* UNSPECIFIED:
  + No sub-layer is specified.

### LifecycleState

Description:

* 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.

### ObjectType

Description:

* The list of TAPI Global Object Class types on which Notification signals can be raised. This extensible enumeration 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.
* PROFILE:

### OperationalState

Description:

* 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.

### Pm

Contains Enumeration Literals:

* BBE:
* DELAY:
* FEC\_CORRECTED\_ERROR:
* SES:
* UAS:

### PmParamName

Description:

* The PM metric names.

Contains Enumeration Literals:

* NATIVE:
  + This value indicates a PM Parameter not standardized by this model and specified only in native info attribute.
* BBE:
* DELAY:
* FEC\_CORRECTED\_ERROR:
* SES:
* UAS:

### PortRole

Description:

* 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.

### TerminationState

Description:

* 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.

### TimeUnit

Description:

* Units of measurement of the time.

Contains Enumeration Literals:

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

## Primitives

### AnyType

Description:

* This primitive represents the "any data" mechanism.

### BinaryType

Description:

* 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.

### MacAddress

Description:

* 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."

### Timeticks

Description:

* 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.

# Topology Model

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

## Diagrams

**Figure 6 – Diagram *EdgePointDetails***

**Figure 7 – Diagram *NodeConstraints***

**Figure 8 – Diagram *TopologyDataTypes***

Graphical user interface

Description automatically generated with medium confidence

**Figure 9 – Diagram *TopologyNotifAndStream***

**Figure 10 – Diagram *TopologyServiceDetails***

**Figure 11 – Diagram *TopologyServiceSkeleton***

## Classes

### InterDomainPlugIdPac

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| plugIdInterDomainLocalId | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| plugIdInterDomainRemoteId | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 39 – Attributes for class *InterDomainPlugIdPac***

### InterRuleGroup

Description:

* Rules that apply between groups of NodeEdgePoint (NEP) instances.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_rule | Rule | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The list of rules of the InterRuleGroup. | | | |
| \_associatedNodeRuleGroup | NodeRuleGroup | 2..\* | R | OpenModelAttribute   * 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   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The rule relates to transfer timimg 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   * 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. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 40 – Attributes for class *InterRuleGroup***

### LayerProtocolTransitionPac

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| transitionedLayerProtocolName | String | 2..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Provides the ordered structure of layer protocol transitions encapsulated in the Link. The list starts with the client side as the first entry and includes all layer-protocol names (hence the smallest number is 2 as otherwise the Link is not transitional). The ordering relates also to the (conceptual) port role (which emphasizes the orientation). | | | |

**Table 41 – Attributes for class *LayerProtocolTransitionPac***

### Link

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_nodeEdgePoint | NodeEdgePoint | 2..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The NEPs connected by the Link. | | | |
| \_state | AdminStatePac | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Link status information. | | | |
| \_transferCapacity | CapacityPac | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Link capacity. | | | |
| \_transferCost | TransferCostPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The transfer cost of the Link. | | | |
| \_transferIntegrity | TransferIntegrityPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The transfer integrity of the Link. | | | |
| \_transferTiming | TransferTimingPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The transfer timing of the Link. | | | |
| \_riskParameter | RiskParameterPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The risk parameters of the Link. | | | |
| \_validation | ValidationPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The validation mechanisms of the Link. | | | |
| \_lpTransition | LayerProtocolTransitionPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The information on encapsulated termination functions, applicable in case of Transitional Link. | | | |
| layerProtocolName | LayerProtocolName | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The layer protocol(s) of the Link. | | | |
| direction | ForwardingDirection | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The directionality of the Link. | | | |
| resilienceType | ResilienceType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The underlying resilience type of the Link. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 42 – Attributes for class *Link***

### NepInventory

Description:

* Table for the mapping between UUID and Inventory Id of NEPs.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| nepInventoryUuid | NepInventoryUuid | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Table for the mapping between UUID and Inventory Id of NEPs. | | | |

**Table 43 – Attributes for class *NepInventory***

### NetworkTopologyService

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_topology | Topology | 0..\* | R | OpenModelAttribute   * 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  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 44 – Attributes for class *NetworkTopologyService***

### Node

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The layer protocol(s) of the (multi-layer) Node. | | | |
| \_ownedNodeEdgePoint | NodeEdgePoint | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| \_aggregatedNodeEdgePoint | NodeEdgePoint | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| \_nodeRuleGroup | NodeRuleGroup | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Node rules applicable to this Node. | | | |
| \_interRuleGroup | InterRuleGroup | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_encapTopology | Topology | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  A Node may encapsulate one Topology instance, which in turn encompasses Nodes at lower partitioning level. | | | |
| \_state | AdminStatePac | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Node status information. | | | |
| \_transferCapacity | CapacityPac | 1 | R | OpenModelAttribute   * 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   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The transfer timing of the Node. | | | |
| \_nepInventory | NepInventory | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Table for the mapping between UUID and Inventory Id of NEPs. | | | |
| \_profile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_riskParameterPac | RiskParameterPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 45 – Attributes for class *Node***

### NodeEdgePoint

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The layer protocol of the NodeEdgePoint (NEP). | | | |
| supportedCepLayerProtocolQualifierInstances | SupportedLayerProtocolQualifier | 0..\* | R | OpenModelAttribute   * 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. | | | |
| availableCepLayerProtocolQualifierInstances | SupportedLayerProtocolQualifier | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| supportedPayloadStructure | PayloadStructure | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| availablePayloadStructure | PayloadStructure | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  More detailed description of available capability than "supportedCepLayerProtocol". | | | |
| \_aggregatedNodeEdgePoint | NodeEdgePoint | 0..\* | R | OpenModelAttribute   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The NodeEdgePoint (NEP) status information. | | | |
| \_capacity | CapacityPac | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The NodeEdgePoint (NEP) capacity information. | | | |
| \_interDomainPlugIdPac | InterDomainPlugIdPac | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  ENNI Identifier. | | | |
| \_nodeRuleGroup | NodeRuleGroup | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_profile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sinkProfile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sourceProfile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| direction | Direction | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The NEP direction. | | | |
| linkPortRole | PortRole | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The role of the (conceptual) port of the associated Link. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 46 – Attributes for class *NodeEdgePoint***

### NodeRuleGroup

Description:

* Rules that apply to a group of NodeEdgePoint (NEP) instances.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_rule | Rule | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The list of rules of the NodeRuleGroup. | | | |
| \_nodeEdgePoint | NodeEdgePoint | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  NEPs and their client CEPs that the rules apply to. This reference is optional, while the reverse reference is mandatory (NEP refers to NRGs). | | | |
| \_nodeRuleGroup | NodeRuleGroup | 0..\* | R | OpenModelAttribute   * 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. | | | |
| \_transferCapacity | CapacityPac | 0..1 | R | OpenModelAttribute   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The rule relates to transfer timimg 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   * 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. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 47 – Attributes for class *NodeRuleGroup***

### RiskParameterPac

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| riskCharacteristic | RiskCharacteristic | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  A list of risk characteristics for consideration in an analysis of shared risk. Each element of the list represents a specific risk consideration. | | | |

**Table 48 – Attributes for class *RiskParameterPac***

### Rule

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| ruleType | RuleType  Default value: *GROUPING* | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The focus of the rule. | | | |
| forwardingRule | ForwardingRule  Default value: *NO\_STATEMENT\_ON\_FORWARDING* | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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 | Direction | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The list of CEP directions that the rule applies to. No entry means all CEP directions. | | | |
| cepPortRole | PortRoleRule | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * 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   * 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. | | | |
| \_profile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sinkProfile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_sourceProfile | Profile | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 49 – Attributes for class *Rule***

### Topology

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_node | Node | 0..\* | R | OpenModelAttribute   * 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   * 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   * 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   * 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  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 50 – Attributes for class *Topology***

### TopologyContext

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_nwTopologyService | NetworkTopologyService | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The defined operations. | | | |
| \_topology | Topology | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The included Topology instances. | | | |

**Table 51 – Attributes for class *TopologyContext***

### TransferCostPac

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| costCharacteristic | CostCharacteristic | 1..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The list of costs where each cost relates to some aspect of the topological entity. | | | |

**Table 52 – Attributes for class *TransferCostPac***

### TransferIntegrityPac

Description:

* Transfer integrity characteristic covers expected/specified/acceptable characteristic of degradation of the transfered 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| errorCharacteristic | String | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| unavailableTimeCharacteristic | String | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Describes the duration for which there may be no valid signal propagated. | | | |
| serverIntegrityProcessCharacteristic | String | 0..1 | R | OpenModelAttribute   * 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. | | | |

**Table 53 – Attributes for class *TransferIntegrityPac***

### TransferTimingPac

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| latencyCharacteristic | LatencyCharacteristic | 1..\* | R | OpenModelAttribute   * 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. | | | |

**Table 54 – Attributes for class *TransferTimingPac***

### ValidationPac

Description:

* Validation covers the various adjacency discovery and reachability verification protocols. Also may cover information source and degree of integrity.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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. | | | |

**Table 55 – Attributes for class *ValidationPac***

## Signals

## Associations

### ContextHasNwTopologyService

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nwTopologyService | composite | Yes | NetworkTopologyService | 0..1 |
| context | none | No | TopologyContext | 1 |

**Table 56 – Member ends for association *ContextHasNwTopologyService***

### ContextHasTopology

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_topology | composite | Yes | Topology | 0..\* |
| context | none | No | TopologyContext | 1 |

**Table 57 – Member ends for association *ContextHasTopology***

### IRGHasAssociatedNRG

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_associatedNodeRuleGroup | none | Yes | NodeRuleGroup | 2..\* |
| interrulegroup | none | No | InterRuleGroup | 0..\* |

**Table 58 – Member ends for association *IRGHasAssociatedNRG***

### IRGHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCapacity | composite | Yes | CapacityPac | 0..1 |
| interrulegroup | none | No | InterRuleGroup | 1 |

**Table 59 – Member ends for association *IRGHasCapacityPac***

### IRGHasCostPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCost | composite | Yes | TransferCostPac | 0..1 |
| interrulegroup | none | No | InterRuleGroup | 1 |

**Table 60 – Member ends for association *IRGHasCostPac***

### IRGHasRiskPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_riskParameter | composite | Yes | RiskParameterPac | 0..1 |
| interrulegroup | none | No | InterRuleGroup | 1 |

**Table 61 – Member ends for association *IRGHasRiskPac***

### IRGHasRules

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_rule | composite | Yes | Rule | 1..\* |
| interrulegroup | none | No | InterRuleGroup | 1 |

**Table 62 – Member ends for association *IRGHasRules***

### IRGHasTimingPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferTiming | composite | Yes | TransferTimingPac | 0..1 |
| interrulegroup | none | No | InterRuleGroup | 1 |

**Table 63 – Member ends for association *IRGHasTimingPac***

### LinkHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCapacity | composite | Yes | CapacityPac | 1 |
| \_link | none | No | Link | 1 |

**Table 64 – Member ends for association *LinkHasCapacityPac***

### LinkHasCostPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCost | composite | Yes | TransferCostPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 65 – Member ends for association *LinkHasCostPac***

### LinkHasIntegrityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferIntegrity | composite | Yes | TransferIntegrityPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 66 – Member ends for association *LinkHasIntegrityPac***

### LinkHasRiskPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_riskParameter | composite | Yes | RiskParameterPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 67 – Member ends for association *LinkHasRiskPac***

### LinkHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| \_link | none | No | Link | 1 |

**Table 68 – Member ends for association *LinkHasStatePac***

### LinkHasTimingPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferTiming | composite | Yes | TransferTimingPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 69 – Member ends for association *LinkHasTimingPac***

### LinkHasTransitionPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_lpTransition | composite | Yes | LayerProtocolTransitionPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 70 – Member ends for association *LinkHasTransitionPac***

### LinkHasValidationPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_validation | composite | Yes | ValidationPac | 0..1 |
| \_link | none | No | Link | 1 |

**Table 71 – Member ends for association *LinkHasValidationPac***

### LinkTerminatesOnNEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nodeEdgePoint | none | Yes | NodeEdgePoint | 2..\* |
| \_linkPort | none | No | Link | 0..1 |

**Table 72 – Member ends for association *LinkTerminatesOnNEP***

### NEPAggregatesNEPsInSameNode

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_aggregatedNodeEdgePoint | shared | Yes | NodeEdgePoint | 0..\* |
| \_nodeEdgePoint | none | No | NodeEdgePoint | 1 |

**Table 73 – Member ends for association *NEPAggregatesNEPsInSameNode***

### NEPHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_capacity | composite | Yes | CapacityPac | 1 |
| nodeedgepoint | none | No | NodeEdgePoint | 1 |

**Table 74 – Member ends for association *NEPHasCapacityPac***

### NEPHasInterDomainId

Description:

* ENNI NEP may have Inter Domain Plug Id.

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_interDomainPlugIdPac | none | Yes | InterDomainPlugIdPac | 0..1 |
| nodeedgepoint | none | No | NodeEdgePoint | 1 |

**Table 75 – Member ends for association *NEPHasInterDomainId***

### NEPRelatesToSIP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mappedServiceInterfacePoint | none | Yes | ServiceInterfacePoint | 0..\* |
| \_mappedNodeEdgePoint | none | No | NodeEdgePoint | 0..\* |

**Table 76 – Member ends for association *NEPRelatesToSIP***

### NRGAggregatesNEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nodeEdgePoint | shared | Yes | NodeEdgePoint | 0..\* |
| \_nodeRuleGroup | none | Yes | NodeRuleGroup | 0..\* |

**Table 77 – Member ends for association *NRGAggregatesNEP***

### NRGEncompassesLowerNRG

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nodeRuleGroup | shared | Yes | NodeRuleGroup | 0..\* |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 78 – Member ends for association *NRGEncompassesLowerNRG***

### NRGHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCapacity | composite | Yes | CapacityPac | 0..1 |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 79 – Member ends for association *NRGHasCapacityPac***

### NRGHasCostPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCost | composite | Yes | TransferCostPac | 0..1 |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 80 – Member ends for association *NRGHasCostPac***

### NRGHasRiskPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_riskParameter | composite | Yes | RiskParameterPac | 0..1 |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 81 – Member ends for association *NRGHasRiskPac***

### NRGHasRules

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_rule | composite | Yes | Rule | 1..\* |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 82 – Member ends for association *NRGHasRules***

### NRGHasTimingPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferTiming | composite | Yes | TransferTimingPac | 0..1 |
| noderulegroup | none | No | NodeRuleGroup | 1 |

**Table 83 – Member ends for association *NRGHasTimingPac***

### NepRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| nodeedgepoint | none | No | NodeEdgePoint | 0..\* |

**Table 84 – Member ends for association *NepRefersProfile***

### NepRefersSinkProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkProfile | shared | Yes | Profile | 0..\* |
| nodeedgepoint | none | No | NodeEdgePoint | 0..\* |

**Table 85 – Member ends for association *NepRefersSinkProfile***

### NepRefersSourceProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sourceProfile | shared | Yes | Profile | 0..\* |
| nodeedgepoint | none | No | NodeEdgePoint | 0..\* |

**Table 86 – Member ends for association *NepRefersSourceProfile***

### NodeAggregatesNEPExposedByEncapsulatedTopology

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_aggregatedNodeEdgePoint | shared | Yes | NodeEdgePoint | 0..\* |
| \_node | none | No | Node | 1..\* |

**Table 87 – Member ends for association *NodeAggregatesNEPExposedByEncapsulatedTopology***

### NodeEPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| \_nodeEdgePoint | none | No | NodeEdgePoint | 1 |

**Table 88 – Member ends for association *NodeEPHasStatePac***

### NodeEncapsulatesIRG

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_interRuleGroup | composite | Yes | InterRuleGroup | 0..\* |
| node | none | No | Node | 1 |

**Table 89 – Member ends for association *NodeEncapsulatesIRG***

### NodeEncapsulatesNRG

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nodeRuleGroup | composite | Yes | NodeRuleGroup | 0..\* |
| node | none | No | Node | 1 |

**Table 90 – Member ends for association *NodeEncapsulatesNRG***

### NodeEncapsulatesTopology

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_encapTopology | shared | Yes | Topology | 0..1 |
| \_forwardingDomain | none | No | Node | 0..1 |

**Table 91 – Member ends for association *NodeEncapsulatesTopology***

### NodeHasCapacityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCapacity | composite | Yes | CapacityPac | 1 |
| \_node | none | No | Node | 1 |

**Table 92 – Member ends for association *NodeHasCapacityPac***

### NodeHasCostPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferCost | composite | Yes | TransferCostPac | 0..1 |
| \_node | none | No | Node | 1 |

**Table 93 – Member ends for association *NodeHasCostPac***

### NodeHasIntegrityPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferIntegrity | composite | Yes | TransferIntegrityPac | 0..1 |
| \_node | none | No | Node | 1 |

**Table 94 – Member ends for association *NodeHasIntegrityPac***

### NodeHasNepInventory

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_nepInventory | composite | Yes | NepInventory | 0..1 |
| node | none | No | Node | 1 |

**Table 95 – Member ends for association *NodeHasNepInventory***

### NodeHasRiskPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_riskParameterPac | composite | Yes | RiskParameterPac | 0..1 |
| node | none | No | Node | 1 |

**Table 96 – Member ends for association *NodeHasRiskPac***

### NodeHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| \_node | none | No | Node | 1 |

**Table 97 – Member ends for association *NodeHasStatePac***

### NodeHasTimingPac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transferTiming | composite | Yes | TransferTimingPac | 0..1 |
| \_node | none | No | Node | 1 |

**Table 98 – Member ends for association *NodeHasTimingPac***

### NodeOwnsNEP

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ownedNodeEdgePoint | composite | Yes | NodeEdgePoint | 0..\* |
| \_node | none | No | Node | 1 |

**Table 99 – Member ends for association *NodeOwnsNEP***

### NodeRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| node | none | No | Node | 0..\* |

**Table 100 – Member ends for association *NodeRefersProfile***

### NwTopologyServiceHasTopology

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_topology | shared | Yes | Topology | 0..\* |
| \_nwTopologyService | none | No | NetworkTopologyService | 0..1 |

**Table 101 – Member ends for association *NwTopologyServiceHasTopology***

### RuleRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| rule | none | No | Rule | 0..\* |

**Table 102 – Member ends for association *RuleRefersProfile***

### RuleRefersSinkProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkProfile | shared | Yes | Profile | 0..\* |
| rule | none | No | Rule | 0..\* |

**Table 103 – Member ends for association *RuleRefersSinkProfile***

### RuleRefersSourceProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sourceProfile | shared | Yes | Profile | 0..\* |
| rule | none | No | Rule | 0..\* |

**Table 104 – Member ends for association *RuleRefersSourceProfile***

### TopologyEncompassesLinks

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_link | composite | Yes | Link | 0..\* |
| \_forwardingDomain | none | No | Topology | 1 |

**Table 105 – Member ends for association *TopologyEncompassesLinks***

### TopologyEncompassesNodes

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_node | composite | Yes | Node | 0..\* |
| \_upperLevelFd | none | No | Topology | 1 |

**Table 106 – Member ends for association *TopologyEncompassesNodes***

### TopologyExposesBoundaryNEPs

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_boundaryNodeEdgePoint | shared | Yes | NodeEdgePoint | 0..\* |
| topology | none | No | Topology | 0..1 |

**Table 107 – Member ends for association *TopologyExposesBoundaryNEPs***

## Abstractions

### AugmentsRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| TopologyContext | TapiContext | Augments the base TAPI Context with TopologyService model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 108 – Member ends for class abstraction *AugmentsRootContext***

### InterRuleGroupAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| InterRuleGroup | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 109 – Member ends for class abstraction *InterRuleGroupAugmentsEventNotif***

### InterRuleGroupAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| InterRuleGroup | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 110 – Member ends for class abstraction *InterRuleGroupAugmentsEventNotifSignal***

### InterRuleGroupAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| InterRuleGroup | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 111 – Member ends for class abstraction *InterRuleGroupAugmentsLogRecordBody***

### InterfaceRealizationTopology

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| NetworkTopologyService | TopologyService |
| **Comment**  The Topology Interface Realization. | |

**Table 112 – Member ends for enum abstraction *InterfaceRealizationTopology***

### LinkAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Link | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 113 – Member ends for class abstraction *LinkAugmentsEventNotif***

### LinkAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Link | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 114 – Member ends for class abstraction *LinkAugmentsEventNotifSignal***

### LinkAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Link | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 115 – Member ends for class abstraction *LinkAugmentsLogRecordBody***

### NepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeEdgePoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 116 – Member ends for class abstraction *NepAugmentsEventNotif***

### NepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeEdgePoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 117 – Member ends for class abstraction *NepAugmentsEventNotifSignal***

### NepAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeEdgePoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 118 – Member ends for class abstraction *NepAugmentsLogRecordBody***

### NodeAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Node | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 119 – Member ends for class abstraction *NodeAugmentsEventNotif***

### NodeAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Node | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 120 – Member ends for class abstraction *NodeAugmentsEventNotifSignal***

### NodeAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Node | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 121 – Member ends for class abstraction *NodeAugmentsLogRecordBody***

### NodeRuleGroupAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeRuleGroup | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 122 – Member ends for class abstraction *NodeRuleGroupAugmentsEventNotif***

### NodeRuleGroupAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeRuleGroup | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 123 – Member ends for class abstraction *NodeRuleGroupAugmentsEventNotifSignal***

### NodeRuleGroupAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NodeRuleGroup | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 124 – Member ends for class abstraction *NodeRuleGroupAugmentsLogRecordBody***

### NtwTopoSrvAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NetworkTopologyService | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 125 – Member ends for class abstraction *NtwTopoSrvAugmentsEventNotif***

### NtwTopoSrvAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NetworkTopologyService | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 126 – Member ends for class abstraction *NtwTopoSrvAugmentsEventNotifSignal***

### NtwTopoSrvAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NetworkTopologyService | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 127 – Member ends for class abstraction *NtwTopoSrvAugmentsLogRecordBody***

### RuleAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Rule | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 128 – Member ends for class abstraction *RuleAugmentsEventNotif***

### RuleAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Rule | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 129 – Member ends for class abstraction *RuleAugmentsEventNotifSignal***

### RuleAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Rule | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 130 – Member ends for class abstraction *RuleAugmentsLogRecordBody***

### TopologyAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Topology | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 131 – Member ends for class abstraction *TopologyAugmentsEventNotif***

### TopologyAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Topology | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 132 – Member ends for class abstraction *TopologyAugmentsEventNotifSignal***

### TopologyAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Topology | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 133 – Member ends for class abstraction *TopologyAugmentsLogRecordBody***

### TopologyObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| TopologyObjectType   * RULE * NETWORK\_TOPOLOGY\_SERVICE * NODE\_EDGE\_POINT * NODE * TOPOLOGY * NODE\_RULE\_GROUP * LINK * INTER\_RULE\_GROUP | ObjectType   * TAPI\_CONTEXT * SERVICE\_INTERFACE\_POINT * PROFILE |
| **Comment**  Enumeration Augment. | |

**Table 134 – Member ends for enum abstraction *TopologyObjectTypeAugmentsObjectType***

## Data Types

### ConnectionSpecReference

Description:

* 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. | | | |

**Table 135 – Attributes for data type *ConnectionSpecReference***

### CostCharacteristic

Description:

* 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 |
| **Description:**  The specific cost. | | | |
| costAlgorithm | String | 1 | RW | OpenModelAttribute   * 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. | | | |

**Table 136 – Attributes for data type *CostCharacteristic***

### LatencyCharacteristic

Description:

* Provides information on latency characteristic for a particular stated trafficProperty.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| trafficPropertyName | String | 1 | RW | OpenModelAttribute   * 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   * 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   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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). | | | |

**Table 137 – Attributes for data type *LatencyCharacteristic***

### NepInventoryUuid

Description:

* Each entry provides the mapping between the UUID and the Inventory Id of a NEP instance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| nepInventoryId | String | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Inventory ID of the NEP. | | | |
| nepUuid | Uuid | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  UUID of the NEP. | | | |

**Table 138 – Attributes for data type *NepInventoryUuid***

### PortRole

Description:

* 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 | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The name of the role of the CEP (associated to the conceptual port) of the Connection. | | | |

**Table 139 – Attributes for data type *PortRole***

### PortRoleRule

Description:

* Constrains which (conceptual) port roles the rule applies to.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| portRole | PortRole | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The role(s) of the port(s) considered in the rule. | | | |
| portRoleRule | PortRoleRuleOption | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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". | | | |

**Table 140 – Attributes for data type *PortRoleRule***

### ResilienceType

Description:

* The type of resiliency (protection/restoration).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| restorationPolicy | RestorationPolicy | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The restoration policy. | | | |
| protectionType | ProtectionType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The protection type. | | | |

**Table 141 – Attributes for data type *ResilienceType***

### RiskCharacteristic

Description:

* 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   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 142 – Attributes for data type *RiskCharacteristic***

### SignalPropertyRule

Description:

* Rule related to an identified signal property.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| signalPropertyName | String | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The name of the signal property to which the rule applies. | | | |
| signalPropertyValueRule | SignalPropertyValueRule | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |

**Table 143 – Attributes for data type *SignalPropertyRule***

### ValidationMechanism

Description:

* Identifies the validation mechanism and describes the characteristics of that mechanism.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| validationMechanism | String | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Name of mechanism used to validate adjacency. | | | |
| layerProtocolAdjacencyValidated | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  State of validation. | | | |
| 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). | | | |

**Table 144 – Attributes for data type *ValidationMechanism***

## Enumerations

### ForwardingRule

Description:

* 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.

### PortRoleRuleOption

Description:

* 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.

### ProtectionType

Description:

* 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 is implemented a second level of resilience, through dynamic restoration of the first connection affected by a failure.
* PERMANENT\_ONE\_PLUS\_ONE\_PROTECTION:
  + Extends the ONE\_PLUS\_ONE\_PROTECTION\_WITH\_DYNAMIC\_RESTORATION allowing an indeterminate number of failures to affect either of the 1+1 routes and the respective subsequent dynamic restorations.
* 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.

### RestorationPolicy

Description:

* The restoration policy.

Contains Enumeration Literals:

* PER\_DOMAIN\_RESTORATION:
  + Restoration is expected to be performed independently within each (restoration) domain scope. This implies that the server is responsible of activating the required control mechanisms to guarantee the restoration of the service autonomously.
* END\_TO\_END\_RESTORATION:
  + Restoration is expected to be performed on end to end basis across all domain(s).
* NA:
  + Not Applicable.

### RuleType

Description:

* 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.
* IMPAIRMENT:

### SignalPropertyValueRule

Description:

* 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 identied 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.

### TopologyObjectType

Description:

* 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.

## Primitives

# 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

## Diagrams

**Figure 12 – Diagram *ConnectionEndPointDetails***

**Figure 13 – Diagram *ConnectivityDataTypes***

Graphical user interface, application, Word

Description automatically generated

**Figure 14 – Diagram *ConnectivityNotifAndStream***

**Figure 15 – Diagram *ConnectivityServiceDetails***

**Figure 16 – Diagram *ConnectivityServiceSkeleton***

**Figure 17 – Diagram *ConnectivityTopologySkeleton***

**Figure 18 – Diagram *Resilience***

## Classes

### CepList

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_connectionEndPoint | ConnectionEndPoint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The list of supported ConnectionEndPoint (CEP) instances. | | | |

**Table 145 – Attributes for class *CepList***

### Connection

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the Connection. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| direction | ForwardingDirection | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The forwarding direction of the Connection. | | | |
| \_state | OperationalStatePac | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Connection status information. | | | |
| \_connectionEndPoint | ConnectionEndPoint | 2..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectionEndPoint (CEP) instances of the Connection. | | | |
| \_lowerConnection | Connection | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_serverConnection | Connection | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The server layer Connections supporting this Connection. | | | |
| \_supportedClientLink | Link | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  A Connection may or may not be bounded by a Node, which defines the forwarding scope. | | | |
| \_route | Route | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Route instances of the Connection. | | | |
| \_switchControl | SwitchControl | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The SwitchControl instances associated to the Connection. | | | |
| connectionSpecReference | ConnectionSpecReference | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Provides the reference to the spec that defines the connection type and cepRoles. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 146 – Attributes for class *Connection***

### ConnectionEndPoint

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the ConnectionEndPoint (CEP). | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol qualifier of the ConnectionEndPoint (CEP). | | | |
| direction | Direction | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The CEP direction. | | | |
| connectionPortRole | PortRole | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The role of the (conceptual) port of the associated Connection. | | | |
| protectionRole | ProtectionRole | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| terminationState | TerminationState | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_state | OperationalStatePac | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectionEndPoint (CEP) status information. | | | |
| \_clientNodeEdgePoint | NodeEdgePoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The supported NodeEdgePoint instance(s). | | | |
| \_aggregatedConnectionEndPoint | ConnectionEndPoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_parentNodeEdgePoint | NodeEdgePoint | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The supporting NodeEdgePoint (NEP) instance. | | | |
| \_profile | Profile | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_sinkProfile | Profile | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_sourceProfile | Profile | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 147 – Attributes for class *ConnectionEndPoint***

### ConnectivityConstraint

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityService type. | | | |
| serviceLevel | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityService capacity. | | | |
| schedule | TimeRange | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityService timing. | | | |
| \_corouteInclusion | ConnectivityService | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The reference to another ConnectivityService instance for corouting purposes. | | | |
| \_diversityExclusion | ConnectivityService | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The references to other ConnectivityService instances for routing diversity purposes. | | | |
| \_connectionInclusion | Connection | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_connectionExclusion | Connection | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |

**Table 148 – Attributes for class *ConnectivityConstraint***

### ConnectivityContext

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included ConnectivityService instances. | | | |
| \_connection | Connection | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included Connection instances. | | | |

**Table 149 – Attributes for class *ConnectivityContext***

### ConnectivityService

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the CS. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol qualifier of the CS. | | | |
| direction | ForwardingDirection | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The forwarding direction of the ConnectivityService. | | | |
| \_endPoint | ConnectivityServiceEndPoint | 2..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityServiceEndPoint (CSEP) instances of the ConnectivityService. | | | |
| \_state | AdminStatePac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityService status information. | | | |
| \_connectivityConstraint | ConnectivityConstraint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated connectivity constraints. | | | |
| \_routingConstraint | RoutingConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated routing constraints. | | | |
| \_topologyConstraint | TopologyConstraint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated topology constraints. Different instances of TopologyConstraints may be used to specify constraints at different layer networks. | | | |
| \_resilienceConstraint | ResilienceConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated resilience constraints. | | | |
| \_connection | Connection | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Connection instance(s) tracking the state of the allocated resources for the support of the ConnectivityService. | | | |
| \_connectivityService | ConnectivityService | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Association to other ConnectivityService instances for complex connectivity provisioning. | | | |
| \_internalPoint | ConnectivityServiceInternalPoint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityServiceInternalPoint (CSIP) instances of the ConnectivityService. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 150 – Attributes for class *ConnectivityService***

### ConnectivityServiceEndPoint

Description:

* 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 | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the ConnectivityServiceEndPoint (CSEP). | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol qualifier of the ConnectivityServiceEndPoint (CSEP). | | | |
| direction | Direction | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The CSEP direction. It is intended the "internal viewpoint", i.e. the source CSEP is sending to the network, the sink CSEP is sending from the network. | | | |
| role | PortRole | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The role of the (conceptual) port of the associated ConnectivityService. | | | |
| protectionRole | ProtectionRole | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityServiceEndPoint (CSEP) capacity. | | | |
| \_state | AdminStatePac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectivityServiceEndPoint (CSEP) status information. | | | |
| \_serviceInterfacePoint | ServiceInterfacePoint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The supporting ServiceInterfacePoint (SIP) instance. | | | |
| \_connectionEndPoint | ConnectionEndPoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectionEndPoint (CEP) instances. | | | |
| \_peerFwdConnectivityServiceEndPoint | ConnectivityServiceEndPoint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectivityServiceEndPoint (CSEP) instance from forwarding perspective. | | | |
| \_serverConnectivityServiceEndPoint | ConnectivityServiceEndPoint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectivityServiceEndPoint (CSEP) instance at a server layer protocol (qualifier). | | | |
| \_protectingConnectivityServiceEndPoint | ConnectivityServiceEndPoint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectivityServiceEndPoint (CSEP) instance from resilience perspective. | | | |
| \_assembledConnectivityServiceEndPoint | ConnectivityServiceEndPoint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectivityServiceEndPoint (CSEP) instances from assembling perspective, e.g. in inverse multiplexing schemes. | | | |
| \_layerProtocolConstraint | LayerProtocolConstraint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The constraints applicable at specific layers. | | | |
| \_profile | Profile | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_sinkProfile | Profile | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_sourceProfile | Profile | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 151 – Attributes for class *ConnectivityServiceEndPoint***

### ConnectivityServiceInternalPoint

Description:

* Experimental class for complex/detailed provisioning schemes.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the ConnectivityServiceInternalPoint (CSIP). | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol qualifier of the ConnectivityServiceInternalPoint (CSIP). | | | |
| \_connectionEndPoint | ConnectionEndPoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated ConnectionEndPoint (CEP) instances. | | | |
| \_nodeEdgePoint | NodeEdgePoint | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The supporting NodeEdgePoint (NEP) instance. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 152 – Attributes for class *ConnectivityServiceInternalPoint***

### LayerProtocolConstraint

Description:

* LayerProtocolConstraint allows to specify constraints at any layer, by allowing the technology specific augmentations of the generic CSEP.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 153 – Attributes for class *LayerProtocolConstraint***

### ResilienceConstraint

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The type of resiliency (protection/restoration). | | | |
| restorationCoordinateType | CoordinateType | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The coordination mechanism between protection/restoration operations across multiple layers. | | | |
| faultConditionDetermination | FaultConditionDetermination | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  0 highest priority, 1 lower, etc. | | | |
| setUpPriority | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The priority with respect to other possible concurrent requests. 0 highest priority, 1 lower, etc. | | | |
| reversionMode | ReversionMode | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Indicates whether the protection/restoration scheme is revertive or non-revertive. | | | |
| waitToRevertTime | TimePeriod | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  If the protection/restoration scheme is revertive, this attribute specifies the time to wait after a fault clears on a higher priority (preferred) resource before reverting to the preferred resource. | | | |
| holdOffTime | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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  Default value: *false* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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  Default value: *false* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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  Default value: *false* | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Indicates which layer protocol this resilience parameters package is configured for. | | | |
| selectionControl | SelectionControl | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Degree of administrative control applied to the switch selection. | | | |
| \_resiliencyRouteConstraint | ResiliencyRouteConstraint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated constraints related to resiliency routes. | | | |

**Table 154 – Attributes for class *ResilienceConstraint***

### ResilienceRoute

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Current information on the route selection. | | | |
| priority | Integer  Default value: *0* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |

**Table 155 – Attributes for class *ResilienceRoute***

### ResiliencyRouteConstraint

Description:

* The constraints related to the Resiliency route.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| priority | Integer  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated routing constraints. | | | |
| \_topologyConstraint | TopologyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated topology constraints. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 156 – Attributes for class *ResiliencyRouteConstraint***

### Route

Description:

* 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** |
| \_resilienceRoute | ResilienceRoute | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Provides optional resilience and state attributes to the Route. | | | |
| \_connectionEndPoint | ConnectionEndPoint | 2..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectionEndPoint (CEP) instances composing the Route. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 157 – Attributes for class *Route***

### Switch

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ConnectionEndPoint (CEP) instance(s) which is (are) currently selected for traffic flow. | | | |
| \_selectedRoute | Route | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Route instance(s) which is (are) currently selected for traffic flow. | | | |
| selectionReason | SelectionReason | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The reason for the current switch selection. | | | |
| switchDirection | Direction | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Sink direction is intended from the unreliable to reliable CEPs. Source direction is the reverse. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 158 – Attributes for class *Switch***

### SwitchControl

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Recursive association to represents hierarchical schemes. | | | |
| \_switch | Switch | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Switch instances composing the protection scheme. | | | |
| \_controlParameters | ResilienceConstraint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The parameters of the protection scheme. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 159 – Attributes for class *SwitchControl***

## Signals

## Associations

### CEPAggregatesCEPs

Applied stereotypes:

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

**Table 160 – Member ends for association *CEPAggregatesCEPs***

### CEPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | OperationalStatePac | 1 |
| \_connectionEndPoint | none | No | ConnectionEndPoint | 1 |

**Table 161 – Member ends for association *CEPHasStatePac***

### CEPIsSupportedByParentNEP

Applied stereotypes:

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

**Table 162 – Member ends for association *CEPIsSupportedByParentNEP***

### CEPListHasCEPs

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectionEndPoint | composite | Yes | ConnectionEndPoint | 0..\* |
| cepholder | none | No | CepList | 1 |

**Table 163 – Member ends for association *CEPListHasCEPs***

### CEPSupportsClientNEPs

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_clientNodeEdgePoint | shared | Yes | NodeEdgePoint | 0..\* |
| \_connectionEndPoint | none | No | ConnectionEndPoint | 1 |

**Table 164 – Member ends for association *CEPSupportsClientNEPs***

### CSEPHasAssembledCSEPs

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_assembledConnectivityServiceEndPoint | none | Yes | ConnectivityServiceEndPoint | 0..\* |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 165 – Member ends for association *CSEPHasAssembledCSEPs***

### CSEPHasCapacityPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_capacity | composite | Yes | Capacity | 0..1 |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 166 – Member ends for association *CSEPHasCapacityPac***

### CSEPHasForwardingPeerCSEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_peerFwdConnectivityServiceEndPoint | none | Yes | ConnectivityServiceEndPoint | 0..1 |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 167 – Member ends for association *CSEPHasForwardingPeerCSEP***

### CSEPHasServerCSEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_serverConnectivityServiceEndPoint | none | Yes | ConnectivityServiceEndPoint | 0..1 |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 168 – Member ends for association *CSEPHasServerCSEP***

### CSEPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 169 – Member ends for association *CSEPHasStatePac***

### CSEPIsProtectedByCSEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_protectingConnectivityServiceEndPoint | none | Yes | ConnectivityServiceEndPoint | 0..1 |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 170 – Member ends for association *CSEPIsProtectedByCSEP***

### CSEPRelatesToCEP

Applied stereotypes:

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

**Table 171 – Member ends for association *CSEPRelatesToCEP***

### CSEPTerminatesOnSIP

Applied stereotypes:

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

**Table 172 – Member ends for association *CSEPTerminatesOnSIP***

### CSIPTerminatesOnNEP

Applied stereotypes:

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

**Table 173 – Member ends for association *CSIPTerminatesOnNEP***

### CepRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| connectionendpoint | none | No | ConnectionEndPoint | 0..\* |

**Table 174 – Member ends for association *CepRefersProfile***

### CepRefersSinkProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkProfile | shared | Yes | Profile | 0..\* |
| connectionendpoint | none | No | ConnectionEndPoint | 0..\* |

**Table 175 – Member ends for association *CepRefersSinkProfile***

### CepRefersSourceProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sourceProfile | shared | Yes | Profile | 0..\* |
| connectionendpoint | none | No | ConnectionEndPoint | 0..\* |

**Table 176 – Member ends for association *CepRefersSourceProfile***

### ConnServHasSubordinateConnServ

Description:

* 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** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectivityService | shared | Yes | ConnectivityService | 0..\* |
| connectivityservice | none | No | ConnectivityService | 1 |

**Table 177 – Member ends for association *ConnServHasSubordinateConnServ***

### ConnServiceHasCSEPs

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_endPoint | composite | Yes | ConnectivityServiceEndPoint | 2..\* |
| \_service | none | No | ConnectivityService | 1 |

**Table 178 – Member ends for association *ConnServiceHasCSEPs***

### ConnServiceHasCSIPs

Applied stereotypes:

* StrictComposite

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

**Table 179 – Member ends for association *ConnServiceHasCSIPs***

### ConnServiceHasConnConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectivityConstraint | composite | Yes | ConnectivityConstraint | 1 |
| \_service | none | No | ConnectivityService | 1 |

**Table 180 – Member ends for association *ConnServiceHasConnConstraints***

### ConnServiceHasResilienceConstr

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_resilienceConstraint | composite | Yes | ResilienceConstraint | 0..1 |
| connectivityservice | none | No | ConnectivityService | 1 |

**Table 181 – Member ends for association *ConnServiceHasResilienceConstr***

### ConnServiceHasRoutingConstr

Description:

* Test comment

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_routingConstraint | composite | Yes | RoutingConstraint | 0..1 |
| connectivityservice | none | No | ConnectivityService | 1 |

**Table 182 – Member ends for association *ConnServiceHasRoutingConstr***

### ConnServiceHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| \_service | none | No | ConnectivityService | 1 |

**Table 183 – Member ends for association *ConnServiceHasStatePac***

### ConnServiceHasTopLevelConnections

Applied stereotypes:

* LifecycleAggregate

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

**Table 184 – Member ends for association *ConnServiceHasTopLevelConnections***

### ConnServiceHasTopologyConstraints

Applied stereotypes:

* StrictComposite

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

**Table 185 – Member ends for association *ConnServiceHasTopologyConstraints***

### ConnTerminatesOnCEP

Applied stereotypes:

* LifecycleAggregate

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

**Table 186 – Member ends for association *ConnTerminatesOnCEP***

### ConnectionEncapsulatesSwitchControl

Applied stereotypes:

* StrictComposite

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

**Table 187 – Member ends for association *ConnectionEncapsulatesSwitchControl***

### ConnectionHasLowerLevelConnections

Applied stereotypes:

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

**Table 188 – Member ends for association *ConnectionHasLowerLevelConnections***

### ConnectionHasRoutes

Applied stereotypes:

* StrictComposite

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

**Table 189 – Member ends for association *ConnectionHasRoutes***

### ConnectionHasServerLayerConnections

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_serverConnection | none | Yes | Connection | 0..\* |
| connection | none | No | Connection | 0..1 |

**Table 190 – Member ends for association *ConnectionHasServerLayerConnections***

### ConnectionHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | OperationalStatePac | 1 |
| \_connection | none | No | Connection | 1 |

**Table 191 – Member ends for association *ConnectionHasStatePac***

### ConnectionIsBoundedByNode

Applied stereotypes:

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

**Table 192 – Member ends for association *ConnectionIsBoundedByNode***

### ConnectionSupportsClientLinks

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_supportedClientLink | none | Yes | Link | 0..\* |
| \_supportingConnection | none | No | Connection | 0..\* |

**Table 193 – Member ends for association *ConnectionSupportsClientLinks***

### ConstrHasCorouteIncl

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_corouteInclusion | none | Yes | ConnectivityService | 0..1 |
| \_connectivityConstraint | none | No | ConnectivityConstraint | 1 |

**Table 194 – Member ends for association *ConstrHasCorouteIncl***

### ConstrHasDiversityExcl

Applied stereotypes:

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

**Table 195 – Member ends for association *ConstrHasDiversityExcl***

### ContextHasConnService

Applied stereotypes:

* StrictComposite

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

**Table 196 – Member ends for association *ContextHasConnService***

### ContextHasConnections

Applied stereotypes:

* StrictComposite

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

**Table 197 – Member ends for association *ContextHasConnections***

### ControlChoosesSwitchPosition

Applied stereotypes:

* StrictComposite

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

**Table 198 – Member ends for association *ControlChoosesSwitchPosition***

### ControlGovernsControls

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_subSwitchControl | none | Yes | SwitchControl | 0..\* |
| switchcontrol | none | No | SwitchControl | 1 |

**Table 199 – Member ends for association *ControlGovernsControls***

### ControlHasParameters

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_controlParameters | composite | Yes | ResilienceConstraint | 1 |
| switchcontrol | none | No | SwitchControl | 1 |

**Table 200 – Member ends for association *ControlHasParameters***

### CsepHasLayerProtocolConstraint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_layerProtocolConstraint | composite | Yes | LayerProtocolConstraint | 0..\* |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 1 |

**Table 201 – Member ends for association *CsepHasLayerProtocolConstraint***

### CsepRefersProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | shared | Yes | Profile | 0..\* |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 0..\* |

**Table 202 – Member ends for association *CsepRefersProfile***

### CsepRefersSinkProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkProfile | shared | Yes | Profile | 0..\* |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 0..\* |

**Table 203 – Member ends for association *CsepRefersSinkProfile***

### CsepRefersSourceProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sourceProfile | shared | Yes | Profile | 0..\* |
| connectivityserviceendpoint | none | No | ConnectivityServiceEndPoint | 0..\* |

**Table 204 – Member ends for association *CsepRefersSourceProfile***

### ResilienceConstraintHasRouteConstraint

Applied stereotypes:

* StrictComposite

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

**Table 205 – Member ends for association *ResilienceConstraintHasRouteConstraint***

### ResiliencyRouteConstraintHasRoutingConstraint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_routingConstraint | composite | Yes | RoutingConstraint | 0..1 |
| resiliencyrouteconstraint | none | No | ResiliencyRouteConstraint | 1 |

**Table 206 – Member ends for association *ResiliencyRouteConstraintHasRoutingConstraint***

### ResiliencyRouteConstraintHasTopologyConstraint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_topologyConstraint | none | Yes | TopologyConstraint | 0..1 |
| resiliencyrouteconstraint | none | No | ResiliencyRouteConstraint | 1 |

**Table 207 – Member ends for association *ResiliencyRouteConstraintHasTopologyConstraint***

### RouteHasResilienceRoute

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_resilienceRoute | composite | Yes | ResilienceRoute | 0..1 |
| route | none | No | Route | 1 |

**Table 208 – Member ends for association *RouteHasResilienceRoute***

### RouteIsDescribedByCEPs

Applied stereotypes:

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

**Table 209 – Member ends for association *RouteIsDescribedByCEPs***

### SwitchSelectsCEPs

Applied stereotypes:

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

**Table 210 – Member ends for association *SwitchSelectsCEPs***

### SwitchSelectsRoute

Applied stereotypes:

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

**Table 211 – Member ends for association *SwitchSelectsRoute***

## Abstractions

### AugmentsRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityContext | TapiContext | Augments the base TAPI Context with ConnectivityContext model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 212 – Member ends for class abstraction *AugmentsRootContext***

### CEPListAugmentsNEP

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| CepList | NodeEdgePoint | This augment allows NEP to refer to its CEPs despite TapiTopology model does not import TapiConnectivity model. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint" | | |

**Table 213 – Member ends for class abstraction *CEPListAugmentsNEP***

### CepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectionEndPoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 214 – Member ends for class abstraction *CepAugmentsEventNotif***

### CepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectionEndPoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 215 – Member ends for class abstraction *CepAugmentsEventNotifSignal***

### ConnectionAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Connection | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 216 – Member ends for class abstraction *ConnectionAugmentsEventNotif***

### ConnectionAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Connection | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 217 – Member ends for class abstraction *ConnectionAugmentsEventNotifSignal***

### ConnectionAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Connection | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 218 – Member ends for class abstraction *ConnectionAugmentsLogRecordBody***

### ConnectionEndPointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectionEndPoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 219 – Member ends for class abstraction *ConnectionEndPointAugmentsLogRecordBody***

### ConnectivityObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| ConnectivityObjectType   * CONNECTION\_END\_POINT * CONNECTIVITY\_SERVICE\_END\_POINT * SWITCH\_CONTROL * SWITCH * ROUTE * LAYER\_PROTOCOL\_CONSTRAINT * CONNECTION * RESILIENCE\_ROUTE * CONNECTIVITY\_SERVICE * RESILIENCE\_ROUTE\_CONSTRAINT * RESILIENCE\_CONSTRAINT | ObjectType   * TAPI\_CONTEXT * SERVICE\_INTERFACE\_POINT * PROFILE |
| **Comment**  Enumeration Augment. | |

**Table 220 – Member ends for enum abstraction *ConnectivityObjectTypeAugmentsObjectType***

### ConnectivityServiceAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityService | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 221 – Member ends for class abstraction *ConnectivityServiceAugmentsEventNotif***

### ConnectivityServiceAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityService | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 222 – Member ends for class abstraction *ConnectivityServiceAugmentsEventNotifSignal***

### ConnectivityServiceAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityService | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 223 – Member ends for class abstraction *ConnectivityServiceAugmentsLogRecordBody***

### ConnectivityServiceEndPointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityServiceEndPoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 224 – Member ends for class abstraction *ConnectivityServiceEndPointAugmentsLogRecordBody***

### CsepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityServiceEndPoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 225 – Member ends for class abstraction *CsepAugmentsEventNotif***

### CsepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityServiceEndPoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 226 – Member ends for class abstraction *CsepAugmentsEventNotifSignal***

### InterfaceRealizationCS

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| ConnectivityService | ConnectivityService |
| **Comment**  The CS Interface Realization. | |

**Table 227 – Member ends for enum abstraction *InterfaceRealizationCS***

### RouteAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Route | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 228 – Member ends for class abstraction *RouteAugmentsEventNotif***

### RouteAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Route | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 229 – Member ends for class abstraction *RouteAugmentsEventNotifSignal***

### RouteAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Route | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 230 – Member ends for class abstraction *RouteAugmentsLogRecordBody***

### SwitchAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Switch | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 231 – Member ends for class abstraction *SwitchAugmentsEventNotif***

### SwitchAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Switch | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 232 – Member ends for class abstraction *SwitchAugmentsEventNotifSignal***

### SwitchAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Switch | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 233 – Member ends for class abstraction *SwitchAugmentsLogRecordBody***

### SwitchControlAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| SwitchControl | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 234 – Member ends for class abstraction *SwitchControlAugmentsEventNotif***

### SwitchControlAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| SwitchControl | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 235 – Member ends for class abstraction *SwitchControlAugmentsEventNotifSignal***

### SwitchControlAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| SwitchControl | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 236 – Member ends for class abstraction *SwitchControlAugmentsLogRecordBody***

## Data Types

### CepRole

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| roleName | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name of the CEP role in the context of the referenced spec. | | | |
| connectionSpecReference | ConnectionSpecReference | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The reference to the spec that defines the CEP role. | | | |

**Table 237 – Attributes for data type *CepRole***

### ConnectionSpecReference

Description:

* The reference to a spec for a type of Connection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| connectionSpecName | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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). | | | |

**Table 238 – Attributes for data type *ConnectionSpecReference***

### ConnectivityServiceSpecReference

Description:

* The reference to a spec for a type of Connectivity Service

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| connectivityServiceSpecName | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name of the Connectivity Service spec. This can be used alone (with no spec reference) where there is only a paper spec. | | | |
| connectivityServiceSpecId | Uuid | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 Connectivity Service). | | | |

**Table 239 – Attributes for data type *ConnectivityServiceSpecReference***

### CsepRole

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| roleName | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name of the CSEP role in the context of the referenced spec. | | | |
| connectivityServiceSpecReference | ConnectivityServiceSpecReference | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The reference to the spec that defines the CSEP role. | | | |

**Table 240 – Attributes for data type *CsepRole***

## Enumerations

### ConnectivityObjectType

Description:

* 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.
* LAYER\_PROTOCOL\_CONSTRAINT:
  + The ServerConstraint class.

### CoordinateType

Description:

* 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.

### FaultConditionDetermination

Description:

* 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.

### ProtectionRole

Description:

* 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.

### ReversionMode

Description:

* 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-revert-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.

### RouteState

Description:

* 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.

### SelectionControl

Description:

* 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.

### SelectionReason

Description:

* 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.

### ServiceType

Description:

* 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.

## Primitives

# 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

## Diagrams

Graphical user interface, application

Description automatically generated

**Figure 19 – Diagram *PathComputationNotifAndStream***

**Figure 20 – Diagram *PathComputationServiceDetails***

**Figure 21 – Diagram *PathComputationServiceSkeleton***

## Classes

### Path

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_link | Link | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The list of Link instances composing the Path instance. | | | |
| \_routingConstraint | RoutingConstraint | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated routing constraints. | | | |
| direction | ForwardingDirection | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The forwarding direction of the Path. | | | |
| layerProtocolName | LayerProtocolName | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the Path. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 241 – Attributes for class *Path***

### PathComputationContext

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_pathCompService | PathComputationService | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included PathComputationService instances. | | | |
| \_path | Path | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included Path instances. | | | |

**Table 242 – Attributes for class *PathComputationContext***

### PathComputationService

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_path | Path | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Path instance(s) tracking the state of the identified resources for the support of the PathComputationService. | | | |
| \_endPoint | PathServiceEndPoint | 2 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The PathServiceEndPoint (PSEP) instances of the PathComputationService. | | | |
| \_routingConstraint | RoutingConstraint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated routing constraints. | | | |
| \_topologyConstraint | TopologyConstraint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated topology constraints. Different instances of TopologyConstraints may be used to specify constraints at different layer networks. | | | |
| \_objectiveFunction | PathObjectiveFunction | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated objective functions. | | | |
| \_optimizationConstraint | PathOptimizationConstraint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The associated optimization constraints. | | | |
| direction | ForwardingDirection | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The forwarding direction of the PathComputationService. | | | |
| layerProtocolName | LayerProtocolName | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the PathComputationService. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 243 – Attributes for class *PathComputationService***

### PathObjectiveFunction

Description:

* The parameters defining the objective functions.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| bandwidthOptimization | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding bandwidth optimization. | | | |
| concurrentPaths | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding concurrent paths. | | | |
| costOptimization | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding cost optimization. | | | |
| linkUtilization | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding link utilization. | | | |
| resourceSharing | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding resource sharing. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 244 – Attributes for class *PathObjectiveFunction***

### PathOptimizationConstraint

Description:

* The parameters defining the optimization constraints.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| trafficInterruption | DirectiveValue | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The directive types regarding traffic interruption. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 245 – Attributes for class *PathOptimizationConstraint***

### PathServiceEndPoint

Description:

* The PathServiceEndPoint (PSEP) encapsulates information related to a PathComputationService at the ingress/egress points of that PathComputationService.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_serviceInterfacePoint | ServiceInterfacePoint | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The supporting ServiceInterfacePoint (SIP) instance. | | | |
| layerProtocolName | LayerProtocolName | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol of the PathServiceEndPoint (PSEP). | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The layer protocol qualifier of the PathServiceEndPoint (PSEP). | | | |
| capacity | Capacity | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The PathServiceEndPoint (PSEP) capacity. | | | |
| role | PortRole | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The role of the (conceptual) port of the associated PathComputationService. | | | |
| direction | Direction | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The direction of the end point. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 246 – Attributes for class *PathServiceEndPoint***

### RoutingConstraint

Description:

* The parameters of the routing constraints.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| costCharacteristic | CostCharacteristic | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The list of costs where each cost relates to some aspect of a topological entity. | | | |
| latencyCharacteristic | LatencyCharacteristic | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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. | | | |
| riskDiversityCharacteristic | RiskCharacteristic | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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  Default value: *true* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  To distinguish if the resources are to be exclusive to the service. | | | |
| tolerableImpact | GradesOfImpact | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Grades of maximum tolerable disruption to traffic. | | | |
| maxAllowedCost | ValueOrPriority | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The specification of the maximum allowed cost. | | | |
| maxAllowedHops | ValueOrPriority | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The specification of the maximum allowed hops. | | | |
| maxAllowedDelay | ValueOrPriority | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The specification of the maximum allowed delay, value in microseconds. | | | |

**Table 247 – Attributes for class *RoutingConstraint***

### TopologyConstraint

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| explicitRoute | Boolean  Default value: *false* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Topology instance to be included in the connectivity route. | | | |
| \_excludeTopology | Topology | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Topology instance to be excluded from the connectivity route. | | | |
| \_includePath | Path | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | Path | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Link instance to be included in the connectivity route. | | | |
| \_excludeLink | Link | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Link instance to be excluded from the connectivity route. | | | |
| \_includeNode | Node | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Node instance to be included in the connectivity route. | | | |
| \_excludeNode | Node | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Node instance to be excluded from the connectivity route. | | | |
| \_includeNodeEdgePoint | NodeEdgePoint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The NodeEdgePoint (NEP) instance to be included in the connectivity route. | | | |
| \_excludeNodeEdgePoint | NodeEdgePoint | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The NodeEdgePoint (NEP) instance to be excluded from the connectivity route. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 248 – Attributes for class *TopologyConstraint***

## Signals

## Associations

### ContextHasPathCompService

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pathCompService | composite | Yes | PathComputationService | 0..\* |
| pathcomputationcontext | none | No | PathComputationContext | 1 |

**Table 249 – Member ends for association *ContextHasPathCompService***

### ContextHasPaths

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_path | composite | Yes | Path | 0..\* |
| pathcomputationcontext | none | No | PathComputationContext | 1 |

**Table 250 – Member ends for association *ContextHasPaths***

### PathHasRoutingConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_routingConstraint | composite | Yes | RoutingConstraint | 1 |
| \_path | none | No | Path | 1 |

**Table 251 – Member ends for association *PathHasRoutingConstraints***

### PathIncludesLinks

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_link | none | Yes | Link | 1..\* |
| \_path | none | No | Path | 0..\* |

**Table 252 – Member ends for association *PathIncludesLinks***

### PathServiceHasComputedPath

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_path | shared | Yes | Path | 1..\* |
| \_pathService | none | No | PathComputationService | 1 |

**Table 253 – Member ends for association *PathServiceHasComputedPath***

### PathServiceHasObjectiveFunction

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_objectiveFunction | composite | Yes | PathObjectiveFunction | 1 |
| \_path | none | No | PathComputationService | 1 |

**Table 254 – Member ends for association *PathServiceHasObjectiveFunction***

### PathServiceHasOptimizationConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_optimizationConstraint | composite | Yes | PathOptimizationConstraint | 1 |
| \_path | none | No | PathComputationService | 1 |

**Table 255 – Member ends for association *PathServiceHasOptimizationConstraints***

### PathServiceHasRoutingConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_routingConstraint | composite | Yes | RoutingConstraint | 1 |
| \_pathService | none | No | PathComputationService | 1 |

**Table 256 – Member ends for association *PathServiceHasRoutingConstraints***

### PathServiceHasSEPs

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_endPoint | composite | Yes | PathServiceEndPoint | 1 |
| \_service | none | No | PathComputationService | 1 |

**Table 257 – Member ends for association *PathServiceHasSEPs***

### PathServiceHasTopologyConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_topologyConstraint | composite | Yes | TopologyConstraint | 0..\* |
| pathcomputationservice | none | No | PathComputationService | 1 |

**Table 258 – Member ends for association *PathServiceHasTopologyConstraints***

### SEPTerminatesOnSIP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_serviceInterfacePoint | none | Yes | ServiceInterfacePoint | 1 |
| \_pathServicePort | none | No | PathServiceEndPoint | 0..\* |

**Table 259 – Member ends for association *SEPTerminatesOnSIP***

## Abstractions

### AugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathComputationContext | TapiContext | Augments the base TAPI Context with PathComputationService model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 260 – Member ends for class abstraction *AugmentRootContext***

### InterfaceRealizationPCS

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| PathComputationService | PathComputationService |
| **Comment**  The Path Computation Service Interface Realization. | |

**Table 261 – Member ends for enum abstraction *InterfaceRealizationPCS***

### PathAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Path | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 262 – Member ends for class abstraction *PathAugmentsEventNotif***

### PathAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Path | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 263 – Member ends for class abstraction *PathAugmentsEventNotifSignal***

### PathAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Path | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 264 – Member ends for class abstraction *PathAugmentsLogRecordBody***

### PathComputationObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| PathComputationObjectType   * PATH\_COMPUTATION\_SERVICE * PATH\_COMPUTATION\_PATH\_SERVICE\_END\_POINT * PATH * PATH\_OBJECTIVE\_FUNCTION * TOPOLOGY\_CONSTRAINT * PATH\_OPTIMIZATION\_CONSTRAINT | ObjectType   * SERVICE\_INTERFACE\_POINT * TAPI\_CONTEXT * PROFILE |
| **Comment**  Enumeration Augment. | |

**Table 265 – Member ends for enum abstraction *PathComputationObjectTypeAugmentsObjectType***

### PathComputationServiceAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathComputationService | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 266 – Member ends for class abstraction *PathComputationServiceAugmentsEventNotif***

### PathComputationServiceAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathComputationService | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 267 – Member ends for class abstraction *PathComputationServiceAugmentsEventNotifSignal***

### PathComputationServiceAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathComputationService | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 268 – Member ends for class abstraction *PathComputationServiceAugmentsLogRecordBody***

### PathObjectiveFunctionAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathObjectiveFunction | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 269 – Member ends for class abstraction *PathObjectiveFunctionAugmentsEventNotif***

### PathObjectiveFunctionAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathObjectiveFunction | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 270 – Member ends for class abstraction *PathObjectiveFunctionAugmentsEventNotifSignal***

### PathObjectiveFunctionAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathObjectiveFunction | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 271 – Member ends for class abstraction *PathObjectiveFunctionAugmentsLogRecordBody***

### PathOptimizationConstrAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathOptimizationConstraint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 272 – Member ends for class abstraction *PathOptimizationConstrAugmentsEventNotif***

### PathOptimizationConstrAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathOptimizationConstraint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 273 – Member ends for class abstraction *PathOptimizationConstrAugmentsEventNotifSignal***

### PathOptimizationConstraintAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathOptimizationConstraint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 274 – Member ends for class abstraction *PathOptimizationConstraintAugmentsLogRecordBody***

### PathServiceEndPointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathServiceEndPoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 275 – Member ends for class abstraction *PathServiceEndPointAugmentsLogRecordBody***

### PsepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathServiceEndPoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 276 – Member ends for class abstraction *PsepAugmentsEventNotif***

### PsepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PathServiceEndPoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 277 – Member ends for class abstraction *PsepAugmentsEventNotifSignal***

## Data Types

### ValueOrPriority

Description:

* 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  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The specified value. | | | |
| priority | Integer  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The specified priority. | | | |

**Table 278 – Attributes for data type *ValueOrPriority***

## Enumerations

### DiversityPolicy

Description:

* 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.

### GradesOfImpact

Description:

* 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.

### PathComputationObjectType

Description:

* 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\_PATH\_SERVICE\_END\_POINT:
  + The PathServiceEndPoint (PSEP) class.
* PATH:
  + The Path class.
* TOPOLOGY\_CONSTRAINT:
  + The TopologyConstraint class.
* PATH\_OPTIMIZATION\_CONSTRAINT:
  + The PathOptimizationConstraint class.
* PATH\_OBJECTIVE\_FUNCTION:
  + The PathObjectiveFunction class.

### RouteObjectiveFunction

Description:

* 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.

## Primitives

# 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

## Diagrams

**Figure 22 – Diagram *OamConnSkeleton***

**Figure 23 – Diagram *OamDetails***

**Figure 24 – Diagram *OamJobDetails***

Graphical user interface, application, Word

Description automatically generated

**Figure 25 – Diagram *OamNotifAndStream***

**Figure 26 – Diagram *OamSkeleton***

**Figure 27 – Diagram *OamTypes***

## Classes

### ConnectivityOamJob

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| oamJobType | OamJobType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The type of the OAM job. | | | |
| schedule | TimeRange | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The schedule of the OAM job. | | | |
| \_profile | Profile | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The (Oam)Profile instance referred by the OamJob. | | | |
| \_pmData | PmData | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 279 – Attributes for class *ConnectivityOamJob***

### ConnectivityOamService

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_connectivityOamServicePoint | ConnectivityOamServicePoint | 1..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 280 – Attributes for class *ConnectivityOamService***

### ConnectivityOamServicePoint

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| isMip | Boolean | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  If true, the object is related to a MIP. If false, the object is related to a MEP. | | | |
| layerProtocolName | LayerProtocolName | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_adminStatePac | AdminStatePac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 281 – Attributes for class *ConnectivityOamServicePoint***

### CurrentData

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| periodStartTime | DateAndTime | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |
| elapsedTime | TimeInterval | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Q822: This attribute represents the difference between the current time and the start of the present interval. | | | |
| \_pmDataPac | PmDataPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Parameters specific to Performance Monitoring functions. | | | |
| \_mep | Mep | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The MEP to which the measurements refer to. At least and exclusively one of CurrentDataOfCep, CurrentDataOfMep, CurrentDataOfMip must be referred by the CurrentData instance. | | | |
| \_mip | Mip | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The MIP to which the measurements refer to. At least and exclusively one of CurrentDataOfCep, CurrentDataOfMep, CurrentDataOfMip must be referred by the CurrentData instance. | | | |
| \_connectionEndPoint | ConnectionEndPoint | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The CEP to which the measurements refer to. At least and exclusively one of CurrentDataOfCep, CurrentDataOfMep, CurrentDataOfMip must be referred by the CurrentData instance. | | | |
| \_historyData | HistoryData | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 282 – Attributes for class *CurrentData***

### HistoryData

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| periodStartTime | DateAndTime | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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 | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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 | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Parameters specific to Performance Monitoring functions. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 283 – Attributes for class *HistoryData***

### Meg

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_operationalStatePac | OperationalStatePac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Meg status information. | | | |
| \_mep | Mep | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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 ouside the managed domain). 3. A maintenance entity may have 2 MEPs. | | | |
| \_mip | Mip | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The maintenance entity group may have 0, 1, or more MIPs. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 284 – Attributes for class *Meg***

### Mep

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Mep layer protocol. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_operationalStatePac | OperationalStatePac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Mep status information. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 285 – Attributes for class *Mep***

### MepMipList

Description:

* This augment allows CEP and NEP to refer to their MEPs/MIPs despite TapiOam model does not import resp. TapiConnectivity and TapiTopology models.

Applied stereotypes:

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

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

**Table 286 – Attributes for class *MepMipList***

### Mip

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| layerProtocolName | LayerProtocolName | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Mip layer protocol. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_operationalStatePac | OperationalStatePac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 287 – Attributes for class *Mip***

### OamContext

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oamService | OamService | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The included OamService instances. | | | |
| \_oamJob | OamJob | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The included OamJob instances. | | | |
| \_meg | Meg | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The included Meg instances. | | | |

**Table 288 – Attributes for class *OamContext***

### OamJob

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| oamJobType | OamJobType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamJob type. | | | |
| oamJobState | OamJobState | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| creationTime | DateAndTime | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamJob creation time. | | | |
| schedule | TimeRange | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamJob schedule. | | | |
| results | String | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Information allowing to retrieve the OAM job results by other means., e.g. file name. | | | |
| \_oamServicePoint | OamServicePoint | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamServicePoint (OSP) instances involved in the OamJob. | | | |
| \_connectionEndPoint | ConnectionEndPoint | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The ConnectionEndPoint (CEP) instances involved in the OamJob. | | | |
| \_connectivityServiceEndPoint | ConnectivityServiceEndPoint | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  In case the OamJob instance is not related to any OamService/Point but created together with ConnectivityService through ConnectivityOamJob augment. | | | |
| \_profile | Profile | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The (Oam)Profile instance referred by the OamJob. | | | |
| \_pmData | PmData | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_currentData | CurrentData | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The CurrentData instances in the scope of the OamJob. | | | |
| \_state | AdminStatePac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamJob status information. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 289 – Attributes for class *OamJob***

### OamProfile

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_pmData | PmData | 1..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The PM threshold information associated to the OamProfile. | | | |

**Table 290 – Attributes for class *OamProfile***

### OamService

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oamServicePoint | OamServicePoint | 1..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamServicePoint (OSP) instances of the OamService. | | | |
| \_meg | Meg | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The Meg instance tracking the state of the allocated resources for the support of the OamService. | | | |
| \_state | AdminStatePac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamService status information. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 291 – Attributes for class *OamService***

### OamServicePoint

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_serviceInterfacePoint | ServiceInterfacePoint | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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 | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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 | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |
| layerProtocolName | LayerProtocolName | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamServicePoint (OSP) layer protocol. | | | |
| layerProtocolQualifier | LayerProtocolQualifier | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_mep | Mep | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The associated Mep instance, mutually exclusive wrt Mip instance. | | | |
| \_mip | Mip | 0..1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The associated Mip instance, mutually exclusive wrt Mep instance. | | | |
| \_state | AdminStatePac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The OamServicePoint (OSP) status information. | | | |
| isMip | Boolean | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  If true, the object is related to a MIP. If false, the object is related to a MEP. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 292 – Attributes for class *OamServicePoint***

### PmData

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| applicableJobType | OamJobType | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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). | | | |
| granularityPeriod | TimePeriod | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The granularity period or measurement interval time. In case of instantaneous measurement this parameter is omitted (e.g. ODU Delay measurement). | | | |
| timeOfTheDayAlignment | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| isTransient | Boolean | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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). | | | |
| codirectional | Boolean | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Applicable in case of embedded provisioning through ConnectivityOamJob. In this case two MIPs on the same CEP can be involved in the same OamJob, hence may be necessary to set different thresholds for codirectional and contradirectional PM Parameters. | | | |
| pmParameter | PmParameter | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The PM metrics and their threshold values. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 293 – Attributes for class *PmData***

### PmDataPac

Description:

* Parameters specific to Performance Monitoring functions.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| granularityPeriod | TimeInterval | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The granularity period or measurement interval time. | | | |
| suspectIntervalFlag | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |

**Table 294 – Attributes for class *PmDataPac***

## Signals

## Associations

### ConnOamSrvHasConnOamSrvPoint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectivityOamServicePoint | composite | Yes | ConnectivityOamServicePoint | 1..\* |
| connectivityoamservice | none | No | ConnectivityOamService | 1 |

**Table 295 – Member ends for association *ConnOamSrvHasConnOamSrvPoint***

### ConnOamSrvPointHasAdminStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_adminStatePac | composite | Yes | AdminStatePac | 1 |
| connectivityoamservicepoint | none | No | ConnectivityOamServicePoint | 1 |

**Table 296 – Member ends for association *ConnOamSrvPointHasAdminStatePac***

### ConnectivityOamJobHasPmData

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmData | composite | Yes | PmData | 0..\* |
| connectivityoamjob | none | No | ConnectivityOamJob | 1 |

**Table 297 – Member ends for association *ConnectivityOamJobHasPmData***

### ConnectivityOamJobRefersOamProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | none | Yes | Profile | 0..1 |
| connectivityoamjob | none | No | ConnectivityOamJob | 1 |

**Table 298 – Member ends for association *ConnectivityOamJobRefersOamProfile***

### ContextHasMegs

Applied stereotypes:

* StrictComposite

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

**Table 299 – Member ends for association *ContextHasMegs***

### ContextHasOamJobs

Applied stereotypes:

* StrictComposite

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

**Table 300 – Member ends for association *ContextHasOamJobs***

### ContextHasOamService

Applied stereotypes:

* StrictComposite

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

**Table 301 – Member ends for association *ContextHasOamService***

### CurrentDataHasHistoryData

Applied stereotypes:

* StrictComposite

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

**Table 302 – Member ends for association *CurrentDataHasHistoryData***

### CurrentDataHasPmDataPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmDataPac | composite | Yes | PmDataPac | 0..1 |
| currentdata | none | No | CurrentData | 1 |

**Table 303 – Member ends for association *CurrentDataHasPmDataPac***

### CurrentDataOfCep

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectionEndPoint | none | Yes | ConnectionEndPoint | 0..1 |
| currentdata | none | No | CurrentData | 0..\* |

**Table 304 – Member ends for association *CurrentDataOfCep***

### CurrentDataOfMep

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mep | none | Yes | Mep | 0..1 |
| currentdata | none | No | CurrentData | 0..\* |

**Table 305 – Member ends for association *CurrentDataOfMep***

### CurrentDataOfMip

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mip | none | Yes | Mip | 0..1 |
| currentdata | none | No | CurrentData | 0..\* |

**Table 306 – Member ends for association *CurrentDataOfMip***

### HistoryDataHasPmDataPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmDataPac | composite | Yes | PmDataPac | 0..1 |
| historydata | none | No | HistoryData | 1 |

**Table 307 – Member ends for association *HistoryDataHasPmDataPac***

### MEGHasMEPs

Applied stereotypes:

* StrictComposite

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

**Table 308 – Member ends for association *MEGHasMEPs***

### MEGHasMIPs

Applied stereotypes:

* StrictComposite

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

**Table 309 – Member ends for association *MEGHasMIPs***

### MEGHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_operationalStatePac | composite | Yes | OperationalStatePac | 1 |
| meg | none | No | Meg | 1 |

**Table 310 – Member ends for association *MEGHasStatePac***

### MEPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_operationalStatePac | composite | Yes | OperationalStatePac | 0..1 |
| mep | none | No | Mep | 1 |

**Table 311 – Member ends for association *MEPHasStatePac***

### MIPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_operationalStatePac | composite | Yes | OperationalStatePac | 0..1 |
| mip | none | No | Mip | 1 |

**Table 312 – Member ends for association *MIPHasStatePac***

### MepListHasMep

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mep | shared | Yes | Mep | 0..\* |
| oamctppacspec | none | No | MepMipList | 1 |

**Table 313 – Member ends for association *MepListHasMep***

### MipListHasMip

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mip | shared | Yes | Mip | 0..\* |
| oamctppacspec | none | No | MepMipList | 1 |

**Table 314 – Member ends for association *MipListHasMip***

### OSPHasStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| oamservicepoint | none | No | OamServicePoint | 1 |

**Table 315 – Member ends for association *OSPHasStatePac***

### OamJobCollectsData

Applied stereotypes:

* StrictComposite

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

**Table 316 – Member ends for association *OamJobCollectsData***

### OamJobHasAdminStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 1 |
| measurementjob | none | No | OamJob | 1 |

**Table 317 – Member ends for association *OamJobHasAdminStatePac***

### OamJobHasCep

Description:

* Direct reference to CEP for simple OAM jobs like loopback.

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectionEndPoint | none | Yes | ConnectionEndPoint | 0..\* |
| oamjob | none | No | OamJob | 0..\* |

**Table 318 – Member ends for association *OamJobHasCep***

### OamJobHasPmData

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmData | composite | Yes | PmData | 0..\* |
| oamjob | none | No | OamJob | 1 |

**Table 319 – Member ends for association *OamJobHasPmData***

### OamJobOperatesOnOamServicePoints

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oamServicePoint | none | Yes | OamServicePoint | 0..\* |
| \_oamJob | none | Yes | OamJob | 0..\* |

**Table 320 – Member ends for association *OamJobOperatesOnOamServicePoints***

### OamJobRefersOamProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | none | Yes | Profile | 0..1 |
| oamjob | none | No | OamJob | 0..\* |

**Table 321 – Member ends for association *OamJobRefersOamProfile***

### OamJobRelatedToCSEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_connectivityServiceEndPoint | none | Yes | ConnectivityServiceEndPoint | 0..1 |
| oamjob | none | No | OamJob | 0..\* |

**Table 322 – Member ends for association *OamJobRelatedToCSEP***

### OamProfileHasPmData

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmData | composite | Yes | PmData | 1..\* |
| pmthresholdprofile | none | No | OamProfile | 1 |

**Table 323 – Member ends for association *OamProfileHasPmData***

### OamServiceHasAdminStatePac

Applied stereotypes:

* ExtendedComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_state | composite | Yes | AdminStatePac | 0..1 |
| oamservice | none | No | OamService | 1 |

**Table 324 – Member ends for association *OamServiceHasAdminStatePac***

### OamServiceHasOamServicePoint

Applied stereotypes:

* StrictComposite

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

**Table 325 – Member ends for association *OamServiceHasOamServicePoint***

### OamServiceManagesMeg

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_meg | shared | Yes | Meg | 0..1 |
| fc | none | No | OamService | 0..1 |

**Table 326 – Member ends for association *OamServiceManagesMeg***

### OamServicePointMonitorsCEP

Applied stereotypes:

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

**Table 327 – Member ends for association *OamServicePointMonitorsCEP***

### OamServicePointMonitorsCSEP

Applied stereotypes:

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

**Table 328 – Member ends for association *OamServicePointMonitorsCSEP***

### OamServicePointMonitorsSIP

Applied stereotypes:

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

**Table 329 – Member ends for association *OamServicePointMonitorsSIP***

### OamServicePointRelatesToMEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mep | none | Yes | Mep | 0..1 |
| \_oamServiceEndPoint | none | No | OamServicePoint | 0..1 |

**Table 330 – Member ends for association *OamServicePointRelatesToMEP***

### OamServicePointRelatesToMIP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mip | none | Yes | Mip | 0..1 |
| \_oamServiceEndPoint | none | No | OamServicePoint | 0..1 |

**Table 331 – Member ends for association *OamServicePointRelatesToMIP***

## Abstractions

### AugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamContext | TapiContext | Augments the base TAPI Context with OamService model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 332 – Member ends for class abstraction *AugmentRootContext***

### ConnectivityOamJobAugmentsCsep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityOamJob | ConnectivityServiceEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint" | | |

**Table 333 – Member ends for class abstraction *ConnectivityOamJobAugmentsCsep***

### ConnectivityOamServiceAugmentsCsep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityOamService | ConnectivityServiceEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint" | | |

**Table 334 – Member ends for class abstraction *ConnectivityOamServiceAugmentsCsep***

### CurrentDataAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| CurrentData | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 335 – Member ends for class abstraction *CurrentDataAugmentsEventNotif***

### CurrentDataAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| CurrentData | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 336 – Member ends for class abstraction *CurrentDataAugmentsEventNotifSignal***

### CurrentDataAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| CurrentData | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 337 – Member ends for class abstraction *CurrentDataAugmentsLogRecordBody***

### HistoryDataAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| HistoryData | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 338 – Member ends for class abstraction *HistoryDataAugmentsEventNotif***

### HistoryDataAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| HistoryData | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 339 – Member ends for class abstraction *HistoryDataAugmentsEventNotifSignal***

### HistoryDataAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| HistoryData | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 340 – Member ends for class abstraction *HistoryDataAugmentsLogRecordBody***

### InterfaceRealizationOamJob

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OamJob | OamJob |
| **Comment**  The OamJob Interface Realization. | |

**Table 341 – Member ends for enum abstraction *InterfaceRealizationOamJob***

### InterfaceRealizationOamProfile

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OamProfile | OamProfile |
| **Comment**  The OamProfile Interface Realization. | |

**Table 342 – Member ends for enum abstraction *InterfaceRealizationOamProfile***

### InterfaceRealizationOamSrv

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OamService | OamService |
| **Comment**  The OamService Interface Realization. | |

**Table 343 – Member ends for enum abstraction *InterfaceRealizationOamSrv***

### MegAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Meg | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 344 – Member ends for class abstraction *MegAugmentsEventNotif***

### MegAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Meg | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 345 – Member ends for class abstraction *MegAugmentsEventNotifSignal***

### MegAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Meg | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 346 – Member ends for class abstraction *MegAugmentsLogRecordBody***

### MepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mep | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 347 – Member ends for class abstraction *MepAugmentsEventNotif***

### MepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mep | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 348 – Member ends for class abstraction *MepAugmentsEventNotifSignal***

### MepAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mep | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 349 – Member ends for class abstraction *MepAugmentsLogRecordBody***

### MepMipListAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| MepMipList | ConnectionEndPoint | This augment allows CEP to refer to its MEPs/MIPs despite TapiOam model does not import TapiConnectivity model. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:Connection:\_connectionEndPoint" | | |

**Table 350 – Member ends for class abstraction *MepMipListAugmentsCep***

### MepMipListAugmentsNep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| MepMipList | NodeEdgePoint | This augment allows NEP to refer to its MEPs/MIPs despite TapiOam model does not import TapiTopology model. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint" | | |

**Table 351 – Member ends for class abstraction *MepMipListAugmentsNep***

### MipAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mip | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 352 – Member ends for class abstraction *MipAugmentsEventNotif***

### MipAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mip | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 353 – Member ends for class abstraction *MipAugmentsEventNotifSignal***

### MipAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Mip | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 354 – Member ends for class abstraction *MipAugmentsLogRecordBody***

### OamJobAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamJob | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 355 – Member ends for class abstraction *OamJobAugmentsEventNotif***

### OamJobAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamJob | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 356 – Member ends for class abstraction *OamJobAugmentsEventNotifSignal***

### OamJobAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamJob | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 357 – Member ends for class abstraction *OamJobAugmentsLogRecordBody***

### OamObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OamObjectType   * MEP * MEG * OAM\_JOB * OAM\_PROFILE * CURRENT\_DATA * OAM\_SERVICE\_POINT * PM\_DATA * OAM\_SERVICE * HISTORY\_DATA * MIP | ObjectType   * SERVICE\_INTERFACE\_POINT * PROFILE * TAPI\_CONTEXT |
| **Comment**  Enumeration Augment. | |

**Table 358 – Member ends for enum abstraction *OamObjectTypeAugmentsObjectType***

### OamProfileAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 359 – Member ends for class abstraction *OamProfileAugmentsProfile***

### OamServiceAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamService | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 360 – Member ends for class abstraction *OamServiceAugmentsEventNotif***

### OamServiceAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamService | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 361 – Member ends for class abstraction *OamServiceAugmentsEventNotifSignal***

### OamServiceAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamService | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 362 – Member ends for class abstraction *OamServiceAugmentsLogRecordBody***

### OamServicePointAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamServicePoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 363 – Member ends for class abstraction *OamServicePointAugmentsEventNotif***

### OamServicePointAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamServicePoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 364 – Member ends for class abstraction *OamServicePointAugmentsEventNotifSignal***

### OamServicePointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OamServicePoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 365 – Member ends for class abstraction *OamServicePointAugmentsLogRecordBody***

### PmThresholdDataAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PmData | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 366 – Member ends for class abstraction *PmThresholdDataAugmentsEventNotif***

### PmThresholdDataAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PmData | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 367 – Member ends for class abstraction *PmThresholdDataAugmentsEventNotifSignal***

### PmThresholdDataAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PmData | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 368 – Member ends for class abstraction *PmThresholdDataAugmentsLogRecordBody***

## Data Types

### PmParameter

Description:

* PM metrics, their locations and threshold values.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| pmParameterName | Pm | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  PM metric name. | | | |
| thresholdConfig | ThresholdConfig | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  PM metric location. | | | |

**Table 369 – Attributes for data type *PmParameter***

### ThresholdConfig

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| thresholdLocation | ThresholdCrossingQualifier | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| thresholdType | ThresholdType | 1 | RW | OpenModelAttribute   * isKey: yes – part: 2 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| pmParameterValue | PmParameterValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| clearThreshold | Boolean | 1 | RW | OpenModelAttribute   * isKey: yes – part: 3 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 370 – Attributes for data type *ThresholdConfig***

## Enumerations

### OamJobState

Contains Enumeration Literals:

* ACTIVE:
* CONCLUDED:
* NOT\_ACTIVE:

### OamJobType

Description:

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

Contains Enumeration Literals:

* LOOPBACK\_FACILITY:
  + External / Line Loopback.
* LOOPBACK\_TERMINAL:
  + Internal / Device Loopback.

### OamObjectType

Description:

* 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\_DATA:
  + The PmThresholdData class.

### ThresholdCrossingQualifier

Description:

* 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 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.

### ThresholdType

Contains Enumeration Literals:

* UPPER:
* LOWER:
* TIDEMARK:
* POSITIVE\_DELTA:
* NEGATIVE\_DELTA:

## Primitives

# 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

## Diagrams

Diagram

Description automatically generated

**Figure 28 – Diagram *FmDetails***

**Figure 29 – Diagram *FmTypes***

## Classes

### AlarmInfo

Description:

* This class augments the Notification class with alarm related parameters. This class is deprecated in favor of DetectedCondition class, which unifies alarm and TCA related parameters.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| alarmName | Alr | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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. | | | |
| nativeAlarmName | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The probable cause of the failure as shown by lower level controllers. | | | |
| nativeAlarmInfo | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Additional info made available by the lower level controllers. | | | |
| isTransient | Boolean | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The alarm severity. | | | |
| 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. | | | |
| alarmCategory | AlarmCategory | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The alarm category, based on ITU-T X.733. | | | |
| alarmQualifier | String | 0..1 | 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 alarm detector. 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 Alarn Name. For Connectivity Alarm Category in case that same CEP instance includes e.g. both OTS and OMS monitoring layers. | | | |

**Table 371 – Attributes for class *AlarmInfo***

### DetectedCondition

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| detectedConditionName | Dc | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name used for the Condition by the source of the information. | | | |
| detectedConditionNativeInfo | String | 0..1 | 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. | | | |
| detectedConditionQualifier | String | 0..1 | 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 Detector. 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 Alarn 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. | | | |
| \_pmMetricInfo | PmMetricInfo | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The PM metric information. | | | |
| \_detectorInfo | DetectorInfo | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The detector info for alarm and TCA. | | | |
| \_simpleDetector | SimpleDetector | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The simple detector state. | | | |

**Table 372 – Attributes for class *DetectedCondition***

### DetectorInfo

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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. | | | |

**Table 373 – Attributes for class *DetectorInfo***

### PmMetricInfo

Description:

* Information associated to a Threshold Crossing Alert.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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. | | | |
| 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. | | | |
| granularityPeriod | TimePeriod | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The granularity period or measurement interval time. This parameter may be necessary when the reference to the OAM Job is not included, e.g. in case the OAM job is not visible at the management interface. | | | |

**Table 374 – Attributes for class *PmMetricInfo***

### SimpleDetector

Description:

* Information regarding the (simple) state of the Detector.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| simpleDetectorState | SimpleDetectorState | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The (simple) state of the Detector. The Detector state accounts for the time characteristics of the detected Condition. | | | |

**Table 375 – Attributes for class *SimpleDetector***

### TcaInfo

Description:

* This class augments the Notification class with threshold crossing alert related parameters. This class is deprecated in favor of DetectedCondition class, which unifies alarm and TCA related parameters.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| thresholdIndicatorName | Pm | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  PM metric name which TCA refers to. | | | |
| nativeThresholdIndicatorName | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  PM metric name which TCA refers to as shown by lower level controllers. | | | |
| nativeTcaInfo | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Additional info made available by the lower level controllers. | | | |
| 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 | 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 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. | | | |
| tcaQualifier | String | 0..1 | 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 TCA detector. | | | |
| granularityPeriod | TimePeriod | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The granularity period or measurement interval time. This parameter may be necessary when the reference to the OAM Job is not included, e.g. in case the OAM job is not visible at the management interface. | | | |
| tcaCategory | AlarmCategory | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 376 – Attributes for class *TcaInfo***

## Signals

## Associations

### DetectedConditionHasDetectorInfo

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_detectorInfo | composite | Yes | DetectorInfo | 0..1 |
| detectedcondition | none | No | DetectedCondition | 1 |

**Table 377 – Member ends for association *DetectedConditionHasDetectorInfo***

### DetectedConditionHasPmMetricInfo

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_pmMetricInfo | composite | Yes | PmMetricInfo | 0..1 |
| detectedcondition | none | No | DetectedCondition | 1 |

**Table 378 – Member ends for association *DetectedConditionHasPmMetricInfo***

### DetectedConditionHasSimpleDetector

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_simpleDetector | composite | Yes | SimpleDetector | 0..1 |
| detectedcondition | none | No | DetectedCondition | 1 |

**Table 379 – Member ends for association *DetectedConditionHasSimpleDetector***

## Abstractions

### AlarmInfoAugmentsNotification

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AlarmInfo | Notification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_notification" | | |

**Table 380 – Member ends for class abstraction *AlarmInfoAugmentsNotification***

### AlarmInfoAugmentsNotificationSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AlarmInfo | Notification |  |
| target: "/TapiNotification:Notifications:Notification" | | |

**Table 381 – Member ends for class abstraction *AlarmInfoAugmentsNotificationSignal***

### AlarmNotificationTypeAugmentsNotificationType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| Fm   * ALARM\_EVENT * THRESHOLD\_CROSSING\_ALERT | NotificationType   * OBJECT\_CREATION * OBJECT\_DELETION * ATTRIBUTE\_VALUE\_CHANGE |
| **Comment**  Enumeration Augment. | |

**Table 382 – Member ends for enum abstraction *AlarmNotificationTypeAugmentsNotificationType***

### DetectedConditionAugmentsConditionDetector

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| DetectedCondition | ConditionDetector |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody/TapiStreaming:LogRecordBody:\_conditionDetector" | | |

**Table 383 – Member ends for class abstraction *DetectedConditionAugmentsConditionDetector***

### DetectedConditionAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| DetectedCondition | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 384 – Member ends for class abstraction *DetectedConditionAugmentsEventNotif***

### DetectedConditionAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| DetectedCondition | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 385 – Member ends for class abstraction *DetectedConditionAugmentsEventNotifSignal***

### TcaInfoAugmentsNotification

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| TcaInfo | Notification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_notification" | | |

**Table 386 – Member ends for class abstraction *TcaInfoAugmentsNotification***

### TcaInfoAugmentsNotificationSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| TcaInfo | Notification |  |
| target: "/TapiNotification:Notifications:Notification" | | |

**Table 387 – Member ends for class abstraction *TcaInfoAugmentsNotificationSignal***

## Data Types

## Enumerations

### AlarmCategory

Contains Enumeration Literals:

* EQUIPMENT:
* ENVIRONMENT:
* CONNECTIVITY:
* PROCESSING:
* SECURITY:

### ConditionType

Description:

* The types of the Condition.

Contains Enumeration Literals:

* ALARM:
* TCA:
  + Threshold Crossing Alert

### DetectorCategory

Description:

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

Contains Enumeration Literals:

* EQUIPMENT:
* ENVIRONMENT:
* CONNECTIVITY:
* PROCESSING:
* SECURITY:
* UNDEFINED:

### Fm

Description:

* The list of alarm specific notification types.

Contains Enumeration Literals:

* ALARM\_EVENT:
  + The notification of a detected condition event, specifically an alarm detected on a given resource.
* THRESHOLD\_CROSSING\_ALERT:
  + The notification of a detected condition event, specifically a threshold crossing alert detected on a given resource.

### PerceivedSeverityType

Description:

* 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.

### PerceivedTcaSeverity

Description:

* 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.

### ServiceAffecting

Description:

* 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.

### SimpleDetectorState

Description:

* 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.

## Primitives

# 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

## Diagrams

**Figure 30 – Diagram *EquipmentDataTypes***

**Figure 31 – Diagram *EquipmentModelDetail***

Graphical user interface, application

Description automatically generated

**Figure 32 – Diagram *EquipmentNotifAndStream***

**Figure 33 – Diagram *EquipmentPatternSkeleton***

## Classes

### AbstractStrand

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_adjacentStrand | AbstractStrand | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Allows expression of an ordered list of abstract strands that support this broader span abstract strand where the specific interconnection is not relevant. CONDITION: Mandatory where the sequence of strands in a physical span a is to be expressed but when the specific interconnection is not relevant. | | | |
| \_splicedStrand | AbstractStrand | 0..2 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  References strands that are spliced to this strand where splice properties need not be represented. CONDITION: Mandatory where a simple representation of a splice between strands is required | | | |
| connectorPin | ConnectorPinAddress | 0..2 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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 and hence splices must be represented explicitly. 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. CONDITION: Mandatory where at least one connector pin detail is to be represented. | | | |
| strandMediaCharacteristics | NameAndValue | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Relevant physical properties of the abstract strand. CONDITION: Mandatory where a simple form of strand characteristics is to be conveyed. | | | |
| \_toStrandJoint | StrandJoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The strand joint through which normal flow of light passes from this fiber. CONDITION: Mandatory where detailed strand joint characteristics related to the flow from the strand are to be expressed. | | | |
| \_strandJoint | StrandJoint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Represents a flow opportunity through a joint. The strand joint is owned by this strand which is one of the two strands (or the strand) that this joint connects. CONDITION: Mandatory where details of properties of the joint need to be expressed. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 388 – Attributes for class *AbstractStrand***

### AccessPort

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| connectorPin | ConnectorPinAddress | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The list of Pins that support the AccessPort. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 389 – Attributes for class *AccessPort***

### AccessPortSupportsNep

Description:

* The AccessPort supporting this NEP. More NEPs can be supported by the same AccessPort. This augment allows NEP to refer to its AccessPort despite TapiTopology model does not import TapiEquipment model.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_accessPort | AccessPort | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Reference to the AccessPort. CONDITION: Mandatory where the NEP is directly supported by an access port. | | | |

**Table 390 – Attributes for class *AccessPortSupportsNep***

### AccessPortSupportsSip

Description:

* The AccessPort supporting this SIP. More SIPs can be supported by the same AccessPort. This augment allows SIP to refer to its AccessPort despite TapiTopology model does not import TapiEquipment model.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_accessPort | AccessPort | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Reference to the AccessPort. CONDITION: Mandatory where the SIP is directly supported by an access port. | | | |

**Table 391 – Attributes for class *AccessPortSupportsSip***

### Device

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_equipment | Equipment | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Equipments of the device. CONDITION: Mandatory where the device has equipment. | | | |
| \_accessPort | AccessPort | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Access ports of the device. CONDITION: Mandatory where access ports are present. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 392 – Attributes for class *Device***

### Equipment

Description:

* Represents any relevant physical thing. May be only expectation, only actual or both expectation and actual. Represents a field replaceable unit. May include non-field-replaceable details.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_containedHolder | Holder | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the equipment has holders. | | | |
| category | EquipmentCategory | 1 | R | OpenInterfaceModelAttribute   * 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Provides details of the location of the equipment within the context oc containing equipments. | | | |
| geographicalLocation | String | 0..1 | R | Deprecated  OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The location of the equipment in a georgraphical context (e.g., lat long). This property is deprecated. CONDITION: Mandatory where there is a relevant geographical location and formal geolocation is not being used (only for equipments not in holders). | | | |
| isExpectedActualMismatch | Boolean  Default value: *false* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates where the expectation does not match the actual. This is false where there is no expectation. CONDITION: Mandatory where there is potential for expectation and hence the property may sometimes be not default. | | | |
| expectedEquipment | ExpectedEquipment | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Provides details of expected equipment at the stated location and/or within the containing holder within the device. CONDITION: Mandatory where there is expectation to be stated. | | | |
| actualEquipment | ActualEquipment | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Provides details of a real equipment present at the stated location and/or within the containing holder within the device. CONDITION: Mandatory where a real equipment is to be represented. | | | |
| \_geolocation | Geolocation | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY |
| **Description:**  The location of the equipment in a georgraphical context using formal coordinates. CONDITION: Mandatory where there is a relevant geographical location using formal coordiantes (only for equipments not in holders). | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 393 – Attributes for class *Equipment***

### Geolocation

Description:

* GPS location.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| altitude | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY |
| **Description:**  Distance above CONDITION: Mandatory where altitude information is relevant and available. | | | |
| latitude | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Relative position north or south on the Earth's surface, in decimal degree (DD) used to express latitude and longitude geographic coordinates. Range: "-90..90" | | | |
| longitude | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Angular distance east or west on the Earth's surface in decimal degree (DD) used to express latitude and longitude geographic coordinates. Range: "-180..180" | | | |

**Table 394 – Attributes for class *Geolocation***

### Holder

Description:

* Represents a space in an equipment in which another equipment can be fitted in the field. It must have at least one of actual holder or expected holder (and may have both).

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_occupyingFru | Equipment | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The field replaceable unit (FRU) that is occupying the holder. The occupying FRU may be only expectation, only actual or both. A holder may be unoccupied. An FRU may occupy more than one holder (using or blocking are intentionally not distinguished here). CONDITION: Mandatory where an occupying FRU is to be stated. | | | |
| expectedHolder | ExpectedHolder | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Details of the contained holder as stated for the expected equipment. CONDITION: Mandatory where an expected holder is to be stated. | | | |
| actualHolder | ActualHolder | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Details of the contained holder as stated for the actual equipment. CONDITION: Mandatory where an actual holder is to be stated. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 395 – Attributes for class *Holder***

### PhysicalContext

Description:

* The collection of all physical things to be described.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_device | Device | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The list of all devices in the context. CONDITION: Mandatory where devices are present and to be listed. | | | |
| \_physicalSpan | PhysicalSpan | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  A list of all physical spans in the context. CONDITION: Mandatory where physical spans are present and to be listed. | | | |

**Table 396 – Attributes for class *PhysicalContext***

### PhysicalRoute

Description:

* The physical route of a connection is modeled as an ordered sequence of physical route element instances. The physical route is a description dedicated to the connection.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_physicalRouteElement | PhysicalRouteElement | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  A point in the PhysicalRoute. A PhysicalRoute must have atleast one point. | | | |
| physicalRouteState | PhysicalRouteState  Default value: *CURRENT* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Provides optional resilience and state attributes to the PhysicalRoute. CONDITION: Mandatory where not always default. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 397 – Attributes for class *PhysicalRoute***

### PhysicalRouteElement

Description:

* A PhysicalRouteElement describes equipment, connectors on those equipments and pins of those connectors that are involved in the physical route of the connection. The description may be in terms of access port or connector pin in route (at least one of access port or connector pin in route must be provided) or both. Where access port is provided alone, this may be because all pins in the connectors of the access port are used, because the connector pin detail id not known the and to its subset of connectorPins which are involved in the physical route. An access port may include connectorPins of more Equipments, e.g., in case of bidirectional access port shared by two "unidirectional"; Equipments. Connector pin details may be provided alone without an access port where there are no access ports modelled.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_accessPortInRoute | AccessPort | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The AccessPort included in the physical route. CONDITION: Mandatory where AccessPort is used to define physical route. | | | |
| connectorPinInRoute | ConnectorPinAddress | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The connectors and pins defining this point in the route where the access port alone is not sufficient or the access port is not provided. CONDITION: Mandatory where AccessPort is not used to define PhysicalRoute or where AccessPort requires clarification as it includes more connectorPins than are used in the route. | | | |

**Table 398 – Attributes for class *PhysicalRouteElement***

### PhysicalRouteList

Description:

* The list of the PhysicalRoutes of a Connection.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_physicalRoute | PhysicalRoute | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  List of PhysicalRoutes composing the physical route of the Connection. CONDITION: Mandatory where a physical route is to be conveyed. | | | |

**Table 399 – Attributes for class *PhysicalRouteList***

### PhysicalSpan

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_accessPort | AccessPort | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The access ports that bound the physical span. This allows for simple point to point cases as well as multi-point cases and cases where the physical span has only one fully defined end. | | | |
| \_abstractStrand | AbstractStrand | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Both the serial segments that form an end-end strand and the parallel end-end strands. CONDITION: Mandatory where abstract strands are to be stated. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 400 – Attributes for class *PhysicalSpan***

### StrandJoint

Description:

* Represents a flow opportunity through a joint. Can represent flow opportunity through: - a connector - a splice - etc. Allows augmentation with impairments and other properties of the joint. Can be used: - as a single instance alone to represent properties that apply equally to each direction of flow - in combinations of multiple instances to represent impairments that are different for normal flow, reverse flow and reflections.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_toAbstractStrand | AbstractStrand | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The strand to which the light from the StrandJoint is fed. There may be no reference where the strand joint is at: - visibility boundary - the connector that feeds the transponder. CONDITION: Mandatory where strand joint is not at far end. | | | |
| applicableToFlowDirection | FlowDirection  Default value: *BOTH* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The flow(s) to which the stated properties of this strand joint apply to. CONDITION: Mandatory where not default | | | |
| reflection | Boolean  Default value: *false* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates that this strand joint states properties of a reflection. A reflection may be: - normal flow where the light passes from a strand (to strand joint) and then back to the same strand - contra flow where the light passes from the strand referenced in to abstract strand back to the same stand (that references the strand joint via to strand joint. The strand referenced in to abstract strand is the same strand that referenced the strand joint. The properties of the strand joint may apply to BOTH directions of reflection for the abstract strand. CONDITION: Mandatory where not default | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 401 – Attributes for class *StrandJoint***

### SupportingPhysicalSpan

Description:

* The PhysicalSpan supporting this Link. More Links can be supported by the same PhysicalSpan. This augment allows Link to refer to its PhysicalSpans despite TapiTopology model does not import TapiEquipment model.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_physicalSpan | PhysicalSpan | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Reference to the PhysicalSpan. CONDITION: Mandatory where the link is supported by a physical span. | | | |

**Table 402 – Attributes for class *SupportingPhysicalSpan***

## Signals

## Associations

### ConnectorPinOnEquipment

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_equipment | none | Yes | Equipment | 1 |
| connectorpinaddress | none | No | ConnectorPinAddress | 0..\* |

**Table 403 – Member ends for association *ConnectorPinOnEquipment***

### ContextHasDevices

Applied stereotypes:

* StrictComposite

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

**Table 404 – Member ends for association *ContextHasDevices***

### ContextHasPhysicalSpans

Applied stereotypes:

* StrictComposite

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

**Table 405 – Member ends for association *ContextHasPhysicalSpans***

### DeviceHasAccessPort

Applied stereotypes:

* StrictComposite

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

**Table 406 – Member ends for association *DeviceHasAccessPort***

### DeviceHasEquipment

Applied stereotypes:

* StrictComposite

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

**Table 407 – Member ends for association *DeviceHasEquipment***

### EquipmentHadGeolocation

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_geolocation | composite | Yes | Geolocation | 0..1 |
| equipment | none | No | Equipment | 1 |

**Table 408 – Member ends for association *EquipmentHadGeolocation***

### EquipmentHasHolder

Applied stereotypes:

* StrictComposite

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

**Table 409 – Member ends for association *EquipmentHasHolder***

### HolderOccupiedByEquipment

Applied stereotypes:

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

**Table 410 – Member ends for association *HolderOccupiedByEquipment***

### InputToStrand

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_toAbstractStrand | none | Yes | AbstractStrand | 0..1 |
| strandjoint | none | No | StrandJoint | 0..\* |

**Table 411 – Member ends for association *InputToStrand***

### LinkSupportedByPhysicalSpan

Applied stereotypes:

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

**Table 412 – Member ends for association *LinkSupportedByPhysicalSpan***

### NodeEdgePointSupportedByAccessPort

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_accessPort | none | Yes | AccessPort | 0..1 |
| supportingaccessport | none | No | AccessPortSupportsNep | 0..\* |

**Table 413 – Member ends for association *NodeEdgePointSupportedByAccessPort***

### OutputFromStrand

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_toStrandJoint | none | Yes | StrandJoint | 0..\* |
| abstractstrand | none | No | AbstractStrand | 0..1 |

**Table 414 – Member ends for association *OutputFromStrand***

### PhysicalRouteElementHasAccessPort

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_accessPortInRoute | none | Yes | AccessPort | 0..1 |
| physicalrouteelement | none | No | PhysicalRouteElement | 0..1 |

**Table 415 – Member ends for association *PhysicalRouteElementHasAccessPort***

### PhysicalRouteHasPhysicalRouteElement

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_physicalRouteElement | composite | Yes | PhysicalRouteElement | 1..\* |
| physicalroute | none | No | PhysicalRoute | 1 |

**Table 416 – Member ends for association *PhysicalRouteHasPhysicalRouteElement***

### PhysicalRouteListRoutes

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_physicalRoute | composite | Yes | PhysicalRoute | 0..\* |
| physicalroute1 | none | No | PhysicalRouteList | 1 |

**Table 417 – Member ends for association *PhysicalRouteListRoutes***

### PhysicalSpanIsSupportedByStrands

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_abstractStrand | composite | Yes | AbstractStrand | 0..\* |
| physicalspan | none | No | PhysicalSpan | 1 |

**Table 418 – Member ends for association *PhysicalSpanIsSupportedByStrands***

### PhysicalSpanJoinsAccessPorts

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_accessPort | none | Yes | AccessPort | 1..\* |
| parallelstrandspan | none | No | PhysicalSpan | 0..1 |

**Table 419 – Member ends for association *PhysicalSpanJoinsAccessPorts***

### ServiceInterfacePointSupportedByAccessPort

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_accessPort | none | Yes | AccessPort | 0..1 |
| sipsupportingaccessport | none | No | AccessPortSupportsSip | 0..\* |

**Table 420 – Member ends for association *ServiceInterfacePointSupportedByAccessPort***

### StrandHasStrandJoint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_strandJoint | composite | Yes | StrandJoint | 0..\* |
| abstractstrand | none | No | AbstractStrand | 1 |

**Table 421 – Member ends for association *StrandHasStrandJoint***

### StrandIsSeriesOfStrands

Applied stereotypes:

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

**Table 422 – Member ends for association *StrandIsSeriesOfStrands***

### StrandSplicedToStrand

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_splicedStrand | none | Yes | AbstractStrand | 0..2 |
| abstractstrand | none | No | AbstractStrand | 0..1 |

**Table 423 – Member ends for association *StrandSplicedToStrand***

## Abstractions

### AbstractStrandAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AbstractStrand | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 424 – Member ends for class abstraction *AbstractStrandAugmentsEventNotif***

### AbstractStrandAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AbstractStrand | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 425 – Member ends for class abstraction *AbstractStrandAugmentsEventNotifSignal***

### AbstractStrandAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AbstractStrand | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 426 – Member ends for class abstraction *AbstractStrandAugmentsLogRecordBody***

### AccessPortAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AccessPort | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 427 – Member ends for class abstraction *AccessPortAugmentsEventNotif***

### AccessPortAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AccessPort | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 428 – Member ends for class abstraction *AccessPortAugmentsEventNotifSignal***

### AccessPortAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AccessPort | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 429 – Member ends for class abstraction *AccessPortAugmentsLogRecordBody***

### AugmentsRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalContext | TapiContext | Augments the base TAPI Context with PhysicalContext model. |
| target: "/TapiCommon:TapiContext:\_context" | | |

**Table 430 – Member ends for class abstraction *AugmentsRootContext***

### DeviceAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Device | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 431 – Member ends for class abstraction *DeviceAugmentsEventNotif***

### DeviceAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Device | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 432 – Member ends for class abstraction *DeviceAugmentsEventNotifSignal***

### DeviceAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Device | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 433 – Member ends for class abstraction *DeviceAugmentsLogRecordBody***

### EquipmentAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Equipment | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 434 – Member ends for class abstraction *EquipmentAugmentsEventNotif***

### EquipmentAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Equipment | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 435 – Member ends for class abstraction *EquipmentAugmentsEventNotifSignal***

### EquipmentAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Equipment | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 436 – Member ends for class abstraction *EquipmentAugmentsLogRecordBody***

### EquipmentObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| EquipmentObjectType   * HOLDER * STRAND\_JOINT * DEVICE * ABSTRACT\_STRAND * ACCESS\_PORT * PHYSICAL\_ROUTE\_ELEMENT * EQUIPMENT * PHYSICAL\_SPAN * PHYSICAL\_ROUTE | TAPI\_CONTEXT |
| **Comment**  Enumeration Augment. | |

**Table 437 – Member ends for enum abstraction *EquipmentObjectTypeAugmentsObjectType***

### HolderAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Holder | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 438 – Member ends for class abstraction *HolderAugmentsEventNotif***

### HolderAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Holder | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 439 – Member ends for class abstraction *HolderAugmentsEventNotifSignal***

### HolderAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Holder | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 440 – Member ends for class abstraction *HolderAugmentsLogRecordBody***

### InterfaceRealizationDevice

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| PhysicalContext | EquipmentInventoryService |
| **Comment**  The Device Interface Realization. | |

**Table 441 – Member ends for enum abstraction *InterfaceRealizationDevice***

### PhysicalRouteAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRoute | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 442 – Member ends for class abstraction *PhysicalRouteAugmentsEventNotif***

### PhysicalRouteAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRoute | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 443 – Member ends for class abstraction *PhysicalRouteAugmentsEventNotifSignal***

### PhysicalRouteAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRoute | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 444 – Member ends for class abstraction *PhysicalRouteAugmentsLogRecordBody***

### PhysicalRouteElementAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRouteElement | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 445 – Member ends for class abstraction *PhysicalRouteElementAugmentsEventNotif***

### PhysicalRouteElementAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRouteElement | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 446 – Member ends for class abstraction *PhysicalRouteElementAugmentsEventNotifSignal***

### PhysicalRouteElementAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRouteElement | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 447 – Member ends for class abstraction *PhysicalRouteElementAugmentsLogRecordBody***

### PhysicalRouteListAugmentsConnection

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalRouteList | Connection | This augment allows Connection to describe its physical route(s) by listing all involved AccessPorts, despite TapiConnectivity model does not import TapiEquipment model. |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connection" | | |

**Table 448 – Member ends for class abstraction *PhysicalRouteListAugmentsConnection***

### PhysicalSpanAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalSpan | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 449 – Member ends for class abstraction *PhysicalSpanAugmentsEventNotif***

### PhysicalSpanAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalSpan | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 450 – Member ends for class abstraction *PhysicalSpanAugmentsEventNotifSignal***

### PhysicalSpanAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhysicalSpan | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 451 – Member ends for class abstraction *PhysicalSpanAugmentsLogRecordBody***

### StrandJointAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StrandJoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 452 – Member ends for class abstraction *StrandJointAugmentsEventNotif***

### StrandJointAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StrandJoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 453 – Member ends for class abstraction *StrandJointAugmentsEventNotifSignal***

### StrandJointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StrandJoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 454 – Member ends for class abstraction *StrandJointAugmentsLogRecordBody***

### SupportingAccessPortAugmentsNEP

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AccessPortSupportsNep | NodeEdgePoint | This augment allows NEP to refer to its AccessPorts despite TapiTopology model does not import TapiEquipment model. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint" | | |

**Table 455 – Member ends for class abstraction *SupportingAccessPortAugmentsNEP***

### SupportingAccessPortAugmentsSIP

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AccessPortSupportsSip | ServiceInterfacePoint |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_serviceInterfacePoint" | | |

**Table 456 – Member ends for class abstraction *SupportingAccessPortAugmentsSIP***

### SupportingPhysicalSpanAugmentsLink

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| SupportingPhysicalSpan | Diagrams | This augment allows Link to refer to its PhysicalSpans despite TapiTopology model does not import TapiEquipment model. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_link" | | |

**Table 457 – Member ends for class abstraction *SupportingPhysicalSpanAugmentsLink***

## Data Types

### ActualEquipment

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties related to equipment type. | | | |
| commonActualProperties | CommonActualProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties related to equipment instance. | | | |
| actualNonFieldReplaceableModule | ActualNonFieldReplaceableModule | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Details of non-field-replaceable modules. CONDITION: Mandatory where there are non-field-replaceable modules. | | | |

**Table 458 – Attributes for data type *ActualEquipment***

### ActualHolder

Description:

* A holder in the ActualEquipment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| commonHolderProperties | CommonHolderProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties related to the holder type. | | | |

**Table 459 – Attributes for data type *ActualHolder***

### ActualNonFieldReplaceableModule

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties related to equipment instance. | | | |
| commonEquipmentProperties | CommonEquipmentProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties related to equipment type. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 460 – Attributes for data type *ActualNonFieldReplaceableModule***

### CommonActualProperties

Description:

* Properties common to actual Equipment instance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| assetInstanceIdentifier | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  This attribute represents the asset identifier of this instance allocated by the owner/operator. May be an empty string where no value has been allocated. May be not present when not supported. The value may be provided written per instance. CONDITION: Mandatory where there is an opportunity to allocate an identifier on an instance basis and where an identifier has been allocated. | | | |
| isPowered | Boolean  Default value: *true* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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 Power function (e.g. different voltage supplies). CONDITION: Mandatory where not default and the power state of the hardware is known. | | | |
| manufactureDate | DateAndTime | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The date on which this instance is manufactured (as provided by the actual hardware). CONDITION: Mandatory where the manufacture date is provided by the actual hardware. | | | |
| serialNumber | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The serial number of this (as provided by the actual hardware). CONDITION: Mandatory where the serial number is provided by the actual hardware. | | | |
| temperature | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The measured temperature of the Equipment (stated in Celsius). If the temperature is supported but temporarily not available then this may be represented by max real number. CONDITION: Mandatory where the equipment provides a temperature measurement. | | | |

**Table 461 – Attributes for data type *CommonActualProperties***

### CommonEquipmentProperties

Description:

* Properties common to all equipments.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| assetTypeIdentifier | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Represents the invariant properties of the equipment asset allocated by the owner/operator that define and characterize the type of equipment. CONDITION: Mandatory where a operator/user asset identifier is available to the controller. | | | |
| equipmentTypeDescription | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Text describing the type of Equipment. CONDITION: Mandatory where a description is available. | | | |
| equipmentTypeIdentifier | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY * condition: |
| **Description:**  This attribute identifies the part type of the equipment. | | | |
| equipmentTypeName | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  This attribute identifies the type of the equipment. CONDITION: Mandatory where there is a name in addition to the equipment type identifier. | | | |
| equipmentTypeVersion | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  This attribute identifies the version of the equipment. CONDITION: Mandatory where there is a known version of the type. | | | |
| manufacturerIdentifier | String | 1 | R | 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 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The formal name of the manufacturer of the Equipment. | | | |

**Table 462 – Attributes for data type *CommonEquipmentProperties***

### CommonHolderProperties

Description:

* Properties common to all holders.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| holderCategory | HolderCategory | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The type of holder. | | | |
| isGuided | Boolean  Default value: *true* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  This attribute indicates whether the holder has guides that constrain the position of the equipment in the holder or not. CONDITION: Mandatory where not default. | | | |
| holderLocation | String | 1 | R | 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). | | | |

**Table 463 – Attributes for data type *CommonHolderProperties***

### ConnectorPinAddress

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| connectorIdentification | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 2 * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Identification of the Connector in the context of the referenced Equipment. CONDITION: Mandatory where there is more than one connector on the equipment. | | | |
| pinIdentification | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 3 * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the pin and role is not being used but there is a need to simply identify the relevant pin. | | | |
| pinAndRole | PinAndRole | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where there is more than one pin and/or a need to identify pin role. | | | |
| \_equipment | Equipment | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Equipment instance supporting the Connector/Pin. | | | |

**Table 464 – Attributes for data type *ConnectorPinAddress***

### ExpectedEquipment

Description:

* 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 | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Properties common to all aspects of Equipment. CONDITION: Mandatory where not equipment not expected. | | | |
| expectedNonFieldReplaceableModule | ExpectedNonFieldReplaceableModule | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Details of modules attached to the expected equipment where those modules are essentially part of the equipment and are not replaceable in the field. Note that there may be modules reported by the actual equipment that are not declared in the expectation detail. Note that mismatch may not account for this detail. CONDITION: Mandatory where expected equipment has known non-field-replaceble modules. | | | |
| expectedHolder | ExpectedHolder | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  A definition of a holder expected in the ActualEquipment (i.e., an ActualHolder) as part of the constraints provided by the ExpectedEquipment. CONDITION: Mandatory where expected equipment has known holders. | | | |
| equipmentNotExpected | Boolean  Default value: *false* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates that it is expected that there be no equipment in the holder. This may be set when there is an intended blanking plate (covering the empty holder) that is not detectable or when the holder is intended to be completely empty. CONDITION: Mandatory where not default. | | | |

**Table 465 – Attributes for data type *ExpectedEquipment***

### ExpectedHolder

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties common to all holders. | | | |

**Table 466 – Attributes for data type *ExpectedHolder***

### ExpectedNonFieldReplaceableModule

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Properties common to all equipments. | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 467 – Attributes for data type *ExpectedNonFieldReplaceableModule***

### PinAndRole

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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. | | | |
| pinRole | String | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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). CONDITION: Mandatory where pin role is to be stated. | | | |
| pinName | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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 CONDITION: Mandatory where pin name is relevant as the description is at pin grnaularity. | | | |
| connectorPinOrientation | ConnectorAndPinOrientation | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  States the orientations of the pin/connector. 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. CONDITION: Mandatory where connector/pin orientation is known and to be stated. | | | |

**Table 468 – Attributes for data type *PinAndRole***

## Enumerations

### ConnectorAndPinOrientation

Description:

* 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.

### EquipmentCategory

Description:

* 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.

### EquipmentObjectType

Description:

* The list of TAPI Equipment Object types/classes.

Contains Enumeration Literals:

* DEVICE:
* ACCESS\_PORT:
* EQUIPMENT:
* HOLDER:
* PHYSICAL\_SPAN:
* ABSTRACT\_STRAND:
* STRAND\_JOINT:
* PHYSICAL\_ROUTE:
* PHYSICAL\_ROUTE\_ELEMENT:

### FlowDirection

Description:

* The direction of flow.

Contains Enumeration Literals:

* NORMAL\_FLOW:
  + Applies to the normal flow of light through the strand joint as expressed via the "to strand joint" statement of a strand.
* CONTRA\_FLOW:
  + The reverse of the NORMAL\_FLOW. The light flows to the strand that references the strand joint with "to strand joint".
* BOTH:
  + The strand joint statement applies to both normal and contra flow.

### HolderCategory

Description:

* 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

### PhysicalRouteState

Description:

* Potential PhysicalRoute states concerning the service support.

Contains Enumeration Literals:

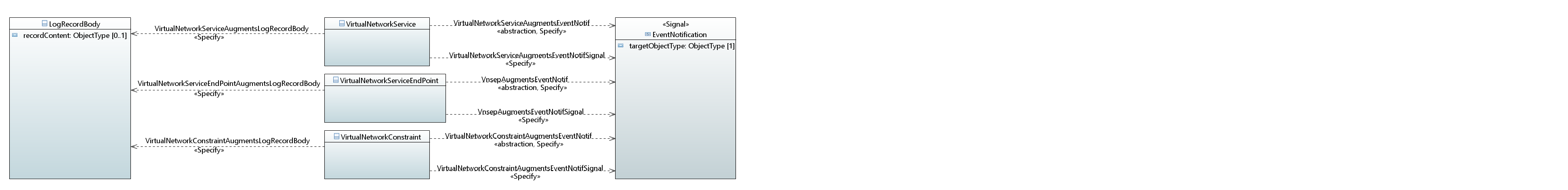
* CURRENT:
  + The PhysicalRoute instance identified is the current PhysicalRoute, i.e., is the one that is active and selected to support service.
* NOT\_CURRENT:
  + The PhysicalRoute instance is not the one supporting the service.
* UNKNOWN:
  + The PhysicalRoute state is unknown.

## Primitives

# 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

## Diagrams



**Figure 34 – Diagram *VirtualNetworkNotifAndStream***

**Figure 35 – Diagram *VirtualNetworkService***

**Figure 36 – Diagram *VirtualNwDetails***

## Classes

### VirtualNetworkConstraint

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_srcServiceEndPoint | ServiceInterfacePoint | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_sinkServiceEndPoint | ServiceInterfacePoint | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_diversityExclusion | VirtualNetworkConstraint | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| requestedCapacity | Capacity | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| serviceLevel | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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 | | | |
| serviceLayer | LayerProtocolName | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| costCharacteristic | CostCharacteristic | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * 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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 469 – Attributes for class *VirtualNetworkConstraint***

### VirtualNetworkContext

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_virtualNwService | VirtualNetworkService | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 470 – Attributes for class *VirtualNetworkContext***

### VirtualNetworkService

Description:

* 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   * AVC: NA   PassedByReference  OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_endPoint | VirtualNetworkServiceEndPoint | 2..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_vnwConstraint | VirtualNetworkConstraint | 1..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_schedule | TimeRange | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_state | AdminStatePac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| layerProtocolName | LayerProtocolName | 1..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 471 – Attributes for class *VirtualNetworkService***

### VirtualNetworkServiceEndPoint

Description:

* 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 ForwadingConstruct 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   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| role | PortRole | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The role of the (conceptual) port of the associated VirtualNetworkService. | | | |
| direction | Direction | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The direction of the end point. | | | |
| serviceLayer | LayerProtocolName | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 472 – Attributes for class *VirtualNetworkServiceEndPoint***

## Signals

## Associations

### ContextHasVirtualNwService

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_virtualNwService | composite | Yes | VirtualNetworkService | 0..\* |
| virtualnetworkcontext | none | No | VirtualNetworkContext | 1 |

**Table 473 – Member ends for association *ContextHasVirtualNwService***

### SEPTerminatesOnSIP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_serviceInterfacePoint | none | Yes | ServiceInterfacePoint | 1 |
| \_vnwServicePort | none | No | VirtualNetworkServiceEndPoint | 0..\* |

**Table 474 – Member ends for association *SEPTerminatesOnSIP***

### VNwConstrHasSinkSvcEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_sinkServiceEndPoint | none | Yes | ServiceInterfacePoint | 1 |
| virtualnetworkconstraint | none | No | VirtualNetworkConstraint | 0..\* |

**Table 475 – Member ends for association *VNwConstrHasSinkSvcEP***

### VNwHasDiversityExclusions

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_diversityExclusion | none | Yes | VirtualNetworkConstraint | 0..\* |
| \_vnwConstraint | none | No | VirtualNetworkConstraint | 1 |

**Table 476 – Member ends for association *VNwHasDiversityExclusions***

### VNwServiceHasSEPs

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_endPoint | composite | Yes | VirtualNetworkServiceEndPoint | 2..\* |
| \_service | none | No | VirtualNetworkService | 1 |

**Table 477 – Member ends for association *VNwServiceHasSEPs***

### VNwServiceHasTopology

Applied stereotypes:

* LifecycleAggregate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_topology | shared | Yes | Topology | 1 |
| \_vnwService | none | No | VirtualNetworkService | 0..1 |

**Table 478 – Member ends for association *VNwServiceHasTopology***

### VNwServiceHasVNwConstraints

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_vnwConstraint | composite | Yes | VirtualNetworkConstraint | 1..\* |
| \_service | none | No | VirtualNetworkService | 1 |

**Table 479 – Member ends for association *VNwServiceHasVNwConstraints***

### VnwConstrHasSrcSvcEP

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_srcServiceEndPoint | none | Yes | ServiceInterfacePoint | 1 |
| virtualnetworkconstraint | none | No | VirtualNetworkConstraint | 0..\* |

**Table 480 – Member ends for association *VnwConstrHasSrcSvcEP***

## Abstractions

### AugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkContext | TapiContext | Augments the base TAPI Context with VirtualNetworkService model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 481 – Member ends for class abstraction *AugmentRootContext***

### InterfaceRealizationVirtualNtw

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| VirtualNetworkService | VirtualNetworkService |
| **Comment**  The Virtual Network Interface Realization. | |

**Table 482 – Member ends for enum abstraction *InterfaceRealizationVirtualNtw***

### VirtualNetworkConstraintAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkConstraint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 483 – Member ends for class abstraction *VirtualNetworkConstraintAugmentsEventNotif***

### VirtualNetworkConstraintAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkConstraint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 484 – Member ends for class abstraction *VirtualNetworkConstraintAugmentsEventNotifSignal***

### VirtualNetworkConstraintAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkConstraint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 485 – Member ends for class abstraction *VirtualNetworkConstraintAugmentsLogRecordBody***

### VirtualNetworkObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| VirtualNetworkObjectType   * VIRTUAL\_NETWORK\_SERVICE\_END\_POINT * VIRTUAL\_NETWORK\_CONSTRAINT * VIRTUAL\_NETWORK\_SERVICE | ObjectType   * SERVICE\_INTERFACE\_POINT * PROFILE * TAPI\_CONTEXT |
| **Comment**  Enumeration Augment. | |

**Table 486 – Member ends for enum abstraction *VirtualNetworkObjectTypeAugmentsObjectType***

### VirtualNetworkServiceAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkService | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 487 – Member ends for class abstraction *VirtualNetworkServiceAugmentsEventNotif***

### VirtualNetworkServiceAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkService | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 488 – Member ends for class abstraction *VirtualNetworkServiceAugmentsEventNotifSignal***

### VirtualNetworkServiceAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkService | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 489 – Member ends for class abstraction *VirtualNetworkServiceAugmentsLogRecordBody***

### VirtualNetworkServiceEndPointAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkServiceEndPoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 490 – Member ends for class abstraction *VirtualNetworkServiceEndPointAugmentsLogRecordBody***

### VnsepAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkServiceEndPoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 491 – Member ends for class abstraction *VnsepAugmentsEventNotif***

### VnsepAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| VirtualNetworkServiceEndPoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 492 – Member ends for class abstraction *VnsepAugmentsEventNotifSignal***

## Data Types

## Enumerations

### VirtualNetworkObjectType

Description:

* 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.

## Primitives

# Notification Model

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

## Diagrams

A picture containing text, receipt, screenshot

Description automatically generated

**Figure 37 – Diagram *NotificationServiceDetails***

## Classes

### AttributeValueChange

Description:

* Object notification related information.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| changedAttributes | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The list of relevant changed attributes and their values. | | | |

**Table 493 – Attributes for class *AttributeValueChange***

### NotificationChannel

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| streamAddress | String | 1 | R | OpenInterfaceModelAttribute   * 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   * 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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 494 – Attributes for class *NotificationChannel***

### NotificationContext

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_notifSubscription | NotificationSubscriptionService | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included NotificationSubscriptionService instances. | | | |
| \_notification | Notification | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included Notification instances. | | | |
| \_eventNotification | EventNotification | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The included Event Notification instances. | | | |

**Table 495 – Attributes for class *NotificationContext***

### NotificationSubscriptionService

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_notification | Notification | 0..\* | R | PassedByReference  OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instances associated to this NotificationSubscriptionService instance. | | | |
| \_eventNotification | EventNotification | 0..\* | RW | PassedByReference  OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The EventNotification instances associated to this NotificationSubscriptionService instance. | | | |
| \_notificationChannel | NotificationChannel | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The NotificationChannel instance of this NotificationSubscriptionService instance. | | | |
| \_subscriptionFilter | SubscriptionFilter | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The SubscriptionFilter instance of this NotificationSubscriptionService instance. | | | |
| subscriptionState | SubscriptionState | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The SubscriptionState value. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 496 – Attributes for class *NotificationSubscriptionService***

### SubscriptionFilter

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| requestedNotificationTypes | NotificationType | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The requested NotificationType value(s). | | | |
| requestedObjectTypes | ObjectType | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The requested ObjectType value(s). | | | |
| requestedLayerProtocols | LayerProtocolName | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The requested layer protocol value(s). | | | |
| requestedObjectIdentifier | Uuid | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The requested object identifier (UUID) value(s). | | | |
| includeContent | Boolean | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 497 – Attributes for class *SubscriptionFilter***

## Signals

### EventNotification

Description:

* 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   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instance is related to the object instance (of a global class - with UUID) with this ObjectType value. Alternatively, the Notification is related to the object instance of a local class, whose global object has this ObjectType value. | | | |
| targetObjectIdentifier | Uuid | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instance is related to the object instance (of a global class) with this UUID value. Alternatively, the Notification is related to the object instance of a local class, whose global object has this UUID value. | | | |
| targetLocalObjectType | ObjectType | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instance is related to the object instance of a local class, whose global object has targetObjectType value. | | | |
| targetLocalObjectIdentifier | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instance is related to the object instance of a local class, whose global object has targetObjectIdentifier value. | | | |
| targetObjectDri | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Data Resource Identifier of the target object as per RFC 8040. | | | |
| targetObjectName | NameAndValue | 0..\* | RW | OpenInterfaceModelAttribute   * 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. | | | |
| eventNotificationType | NotificationType | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| eventTimeStamp | DateAndTime | 1 | RW | OpenInterfaceModelAttribute   * 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   * 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. | | | |
| sourceIndicator | SourceIndicator | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The possible source of this Notification instance. | | | |
| layerProtocolName | LayerProtocolName | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification instance is related to a resource with these layer protocol qualifier values. | | | |
| additionalInfo | NameAndValue | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

### Notification

Description:

* 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   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Notification type. | | | |
| targetObjectType | ObjectType | 1 | RW | OpenInterfaceModelAttribute   * 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   * 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   * 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   * 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 | R | OpenInterfaceModelAttribute   * 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. | | | |
| sourceIndicator | SourceIndicator | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The possible source of this Notification instance. | | | |
| layerProtocolName | LayerProtocolName | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Name and value list available for unspecified content. | | | |
| additionalText | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Text available for unspecified content. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

## Associations

### ContextHasLegacyNotification

Applied stereotypes:

* StrictComposite

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

**Table 498 – Member ends for association *ContextHasLegacyNotification***

### ContextHasNotification

Applied stereotypes:

* StrictComposite

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

**Table 499 – Member ends for association *ContextHasNotification***

### ContextHasNotificationSubscription

Applied stereotypes:

* StrictComposite

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

**Table 500 – Member ends for association *ContextHasNotificationSubscription***

### NotifSubscriptionAccessesEventNotification

Applied stereotypes:

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

**Table 501 – Member ends for association *NotifSubscriptionAccessesEventNotification***

### NotifSubscriptionAccessesNotification

Applied stereotypes:

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

**Table 502 – Member ends for association *NotifSubscriptionAccessesNotification***

### NotifSubscriptionHasChannel

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_notificationChannel | composite | Yes | NotificationChannel | 1 |
| \_notifSubscription | none | No | NotificationSubscriptionService | 1 |

**Table 503 – Member ends for association *NotifSubscriptionHasChannel***

### NotifSubscriptionHasFilter

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_subscriptionFilter | composite | Yes | SubscriptionFilter | 0..\* |
| \_notifSubscription | none | No | NotificationSubscriptionService | 1 |

**Table 504 – Member ends for association *NotifSubscriptionHasFilter***

### NotificationHasTarget

Applied stereotypes:

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

**Table 505 – Member ends for association *NotificationHasTarget***

## Abstractions

### AttributeValueChangeAugmentsNotification

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AttributeValueChange | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 506 – Member ends for class abstraction *AttributeValueChangeAugmentsNotification***

### AttributeValueChangeAugmentsNotificationSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AttributeValueChange | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 507 – Member ends for class abstraction *AttributeValueChangeAugmentsNotificationSignal***

### AugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| NotificationContext | TapiContext | Augments the base TAPI Context with NotificationService model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 508 – Member ends for class abstraction *AugmentRootContext***

### InterfaceRealizationNotification

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| NotificationSubscriptionService | NotificationSubscriptionService |
| **Comment**  The Notification Interface Realization. | |

**Table 509 – Member ends for enum abstraction *InterfaceRealizationNotification***

### NotificationObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| NotificationObjectType   * NOTIFICATION\_SUBSCRIPTION\_SERVICE | ObjectType   * TAPI\_CONTEXT * SERVICE\_INTERFACE\_POINT * PROFILE |
| **Comment**  Enumeration Augment. | |

**Table 510 – Member ends for enum abstraction *NotificationObjectTypeAugmentsObjectType***

### ProfileAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Profile | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 511 – Member ends for class abstraction *ProfileAugmentsEventNotif***

### ProfileAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Profile | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 512 – Member ends for class abstraction *ProfileAugmentsEventNotifSignal***

### SipAugmentsEventNotif

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ServiceInterfacePoint | EventNotification |  |
| target: "/TapiCommon:Context:\_context/TapiNotification:NotificationContext:\_notificationContext/TapiNotification:NotificationContext:\_eventNotification" | | |

**Table 513 – Member ends for class abstraction *SipAugmentsEventNotif***

### SipAugmentsEventNotifSignal

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ServiceInterfacePoint | EventNotification |  |
| target: "/TapiNotification:Notifications:EventNotification" | | |

**Table 514 – Member ends for class abstraction *SipAugmentsEventNotifSignal***

## Data Types

### NameAndValueChange

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| valueName | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The old value. | | | |
| newValue | String | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The new value. | | | |

**Table 515 – Attributes for data type *NameAndValueChange***

## Enumerations

### NotificationObjectType

Description:

* 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.

### NotificationType

Description:

* 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.

### SourceIndicator

Description:

* 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.

### SubscriptionState

Description:

* The SubscriptionState types.

Contains Enumeration Literals:

* SUSPENDED:
  + The subscription is suspended.
* ACTIVE:
  + The subscription is active.

## Primitives

# 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

## Diagrams

**Figure 38 – Diagram *CommonAugmentationForStreaming***

**Figure 39 – Diagram *StreamDataTypes***

**Figure 40 – Diagram *StreamDetail***

**Figure 41 – Diagram *StreamSkeleton***

**Figure 42 – Diagram *StreamingAugmentationForStreaming***

## Classes

### AlarmConditionDetectorDetail

Description:

* A record of the state of a detector where that detector has two underling states that are of asymmetric importance.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| alarmDetectorState | AlarmDetectorState  Default value: *CLEAR* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The state of the detector. The detector state accounts for the time characteristics of the detected condition. CONDITION: Mandatory where the detector state is not default. | | | |
| legacyProperties | LegacyProperties | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  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. CONDITION: Mandatory where legacy properties are to be conveyed. | | | |

**Table 516 – Attributes for class *AlarmConditionDetectorDetail***

### AnyClass

Description:

* Used where the structure to be sent is not a standard TAPI class. It is expected that this structure would be augmented with other defined data.

Applied stereotypes:

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

### AvailableStream

Description:

* Details of 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  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. There may be a sequence of operations required, in which case, these should be listed as separate strings. A string may include wildcard sub-statements. A single string may list alternatives separated by an appropriate delimiter. | | | |
| streamState | StreamState  Default value: *ACTIVE* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The state of the stream. CONDITION: Mandatory where stream state is not ALWAYS default. | | | |
| \_supportedStreamType | SupportedStreamType | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   PassedByReference  OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Identifies the type of stream that is available for connection. | | | |
| streamId | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The id of the stream (alternative to the uuid). CONDITION: Mandatory where an alternative id to the uuid is available. | | | |
| connectionProtocol | ConnectionProtocol  Default value: *WEBSOCKETS* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where not default and multiple options offered in the supported stream type. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 517 – Attributes for class *AvailableStream***

### CompactedLogDetails

Description:

* 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  Default value: *FOREVER* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Time in minutes. The time period for which a Tombstone record will be held in the log from when it was logged. This provides an adjustment to the essential Compaction strategy such that after the tombstoneRetention period there will be no records about a particular thing that existed but no longer exists. Tombstone retention overrides recordRetention for Tombstones. Key word "FOREVER" means that Tombstone records will never be removed from the log. Can be adjusted by an administrator (via a separate view) through the life of the stream. CONDITION: Mandatory where not default. | | | |
| compactionDelay | String  Default value: *0* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Time in minutes. The delay between logging the record and making the record available for compaction. This provides an adjustment to the essential Compaction strategy such that there may be several distinct records for the same thing in the where those records are not older than the Compaction Delay. Can be adjusted by an administrator (via a separate view) through the life of the stream. CONDITION: Mandatory where not default. | | | |
| maxAllowedSegmentRollDelay | String  Default value: *NOT\_APPLICABLE* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The maximum time the log head segment can be allowed to be not made available for compaction. Applicable where the log is segmented, and the head segment is not available for compaction. The setting influences the compaction behavior and may cause a delay before compaction that is much greater than the defined compaction delay. Time in seconds. Can be "FOREVER". Can be "NOT\_APPLICABLE" (which indicates that compaction can act on the head segment). CONDITION: Mandatory if log is segmented in such a way that the active head segment is not available for compaction. | | | |
| maxCompactionLag | String  Default value: *NOT\_APPLICABLE* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The maximum delay, in seconds, beyond the defined compaction delay for compaction processing to take place. May be "NOT\_APPLICABLE" if compaction is essentially immediate (i.e., there is negligible delay). CONDITION: Mandatory where not default. | | | |

**Table 518 – Attributes for class *CompactedLogDetails***

### ConditionDetector

Description:

* 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 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) + natveConditionName).

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| conditionNativeName | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name used for the Condition by the source of the information. | | | |
| measuredEntityUuid | Uuid | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The uuid 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. CONDITION: Mandatory where there is a standard TAPI entity (normally the case). | | | |
| measuredEntityNativeId | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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. | | | |
| measuredEntityDeviceNativeName | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The name of the device (as used by the device) that includes the measured entity. CONDITION: Mandatory where the device name is necessary to interpret the detector native id. | | | |
| conditionNormalizedName | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the condition has a normalized name. | | | |
| measuredEntityClass | ObjectType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the measured entity class is known. | | | |
| detectorUuid | Uuid | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The uuid 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. CONDITION: Mandatory where the detector has a normalized form with a uuid. | | | |
| detectorNativeId | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * 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. | | | |
| 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: CONDITIONAL\_MANDATORY * condition: |
| **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 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. CONDITION: Mandatory where the measured entity is a local class and hence needs local id as well as parent uuid. | | | |

**Table 519 – Attributes for class *ConditionDetector***

### ConnectionProtocolDetails

Description:

* Details of the connection protocols available for the specific stream.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| allowedConnectionProtocols | ConnectionProtocol  Default value: *WEBSOCKETS* | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Name of the allowed protocol(s). Where there is a list: - all protocols must use the same encoding format - there will be one or more available streams per connection protocol CONDITION: Mandatory where not default. | | | |
| encodingFormat | EncodingFormat  Default value: *JSON* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The encoding format of the streamed records. CONDITION: Mandatory where not default. | | | |

**Table 520 – Attributes for class *ConnectionProtocolDetails***

### DynamicStreamData

Description:

* Dynamic information on the monitoring of the use of a specific AvailableStream by a specific TAPI client.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| idOfLastRecordWrittenToLog | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The id/key of the last (most recent) record written to the log. This is the same value for all clients of the stream. CONDITION: Mandatory where the most recent record written is being recorded. | | | |
| idOfLastRecordReadFromLog | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The id/key of the last (most recent) record read from the log by the client stream. The analysis of this value needs to account for stream buffering in the comms layer. CONDITION: Mandatory where last record read is being recorded. | | | |
| lastUpdated | DateAndTime | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The date/time when the values provided were recorded. | | | |

**Table 521 – Attributes for class *DynamicStreamData***

### InformationRecordStrategy

Description:

* Properties relevant for a stream that may convey records of INFORMATION record type.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| recordSuppression | RecordSuppression  Default value: *NO\_SUPPRESSION* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates whether records are suppressed and if so, what the suppression strategy is. CONDITION: Mandatory where not default. | | | |
| valueExpectation | ValueExpectation  Default value: *NO\_EXPECTATION* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Where there is record suppression this indicates what the relevant expected value is. If the value is as expected the record will be suppressed. CONDITION: Mandatory where not default. | | | |
| allowedDitherFromValueExpectation | ValueExpectationDither  Default value: *NO\_DITHER* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Defines the dither in an expected value that is allowed for the value to still be considered as expected. CONDITION: Mandatory where not default. | | | |

**Table 522 – Attributes for class *InformationRecordStrategy***

### LogRecord

Description:

* 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 | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The header of the log record providing general parameters of the record common to all records. CONDITION: Mandatory where log record header properties are to be conveyed. | | | |
| \_logRecordBody | LogRecordBody | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The body of the log record providing specific logged details. CONDITION: Mandatory where log record body properties are to be conveyed. | | | |

**Table 523 – Attributes for class *LogRecord***

### LogRecordBody

Description:

* The specific details of the Record.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| eventTimeStamp | ApproxDateAndTime | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Time of the event at the origin of the event that triggered the generation of the record. The structure allows for time uncertainty. CONDITION: Mandatory where event time is not conveyed via another property. | | | |
| eventSource | EventSource  Default value: *UNKNOWN* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where not default. | | | |
| additionalEventInfo | NameAndValue | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where there is additional info to convey. | | | |
| parentAddress | String | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the class has a parent, and the parent is not context. | | | |
| recordContent | ObjectType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the record content is (the whole of or part of) a standard TAPI object. | | | |

**Table 524 – Attributes for class *LogRecordBody***

### LogRecordHeader

Description:

* 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 | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The identifier of the context. CONDITION: Mandatory where there is information related to more than one tapi context in the stream. | | | |
| token | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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). For a basic log solution this may simply be the sequence number. CONDITION: Mandatory where the stream type is from a compacted log OR it offers an opportunity to recover from a particular record using the token. | | | |
| fullLogRecordOffsetId | NameAndValue | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This property must minimally provide a logging sequence number. Note that when compaction is active, the streamed sequence may not have sequence numbers that simply increment by one. 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) | | | |
| logAppendTimeStamp | DateAndTime | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The time when the record was appended to the log. CONDITION: Mandatory where the log is compacted. | | | |
| entityKey | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the log is compacted. | | | |
| recordType | RecordType  Default value: *INFORMATION* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  The type of the record. Can be used to understand which elements of the record will be present. CONDITION: Mandatory where not default. | | | |
| recordAuthenticityToken | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  A token generated using a method that allows the client to validate that the record came from the expected provider. CONDITION: Mandatory where authenticity method providing a token is required. | | | |

**Table 525 – Attributes for class *LogRecordHeader***

### StreamAdminContext

Description:

* Context providing access to stream administration.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_streamMonitor | StreamMonitor | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY * condition: |
| **Description:**  The list of available stream monitors. Note that this may be an empty list. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 526 – Attributes for class *StreamAdminContext***

### StreamContext

Description:

* 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   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY * condition: |
| **Description:**  The list of streams that are available for client connection. Note that this may be an empty list. | | | |
| \_supportedStreamType | SupportedStreamType | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY * condition: |
| **Description:**  The list of stream types supported by the provider. Note that this may be an empty list. | | | |

**Table 527 – Attributes for class *StreamContext***

### StreamMonitor

Description:

* Information on the monitoring of the use of a specific AvailableStream by a specific TAPI client.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_availableStream | AvailableStream | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   PassedByReference  OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| clientId | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The id of the connected client. | | | |
| 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. | | | |
| \_dynamicStreamData | DynamicStreamData | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Dynamic information on the monitoring of the use of the stream. CONDITION: Mandatory where dynamic data is to be reported. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 528 – Attributes for class *StreamMonitor***

### SupportedStreamType

Description:

* Definition of a type of stream that is supported by the provider.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| streamTypeName | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Name of the stream type. CONDITION: Mandatory where assisted human interpretation is required. | | | |
| recordRetention | String  Default value: *FOREVER* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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). Applies to all record types in the stream unless overridden by another parameter (such as tombstone retention for a compacted log). CONDITION: Mandatory where not default. | | | |
| segmentSize | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Size of sub-structuring of the log. CONDITION: Mandatory where log is segmented and segment size is considered relevant for client application usage. | | | |
| streamTypeContent | ObjectType | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Identifies the classes that are supported through the stream. The list may be a subset of the classes within the context. CONDITION: Mandatory if the stream propagates TAPI entities. If not present a separate augment MUST explain stream content. | | | |
| logStorageStrategy | LogStorageStrategy  Default value: *COMPACTED* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates the storage characteristics of the log supporting the stream. CONDITION: Mandatory where not default. | | | |
| logRecordStrategy | LogRecordStrategy  Default value: *WHOLE\_ENTITY* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:** | | | |
| recordTrigger | RecordTrigger  Default value: *ON\_CHANGE* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Defines the trigger to log a record. CONDITION: Mandatory where not default. | | | |
| uuid  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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}-[0-9a-fA-F]{12} Example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6 | | | |
| name  Inherited: *TapiCommon::ObjectClasses::GlobalClass::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. | | | |

**Table 529 – Attributes for class *SupportedStreamType***

## Signals

### StreamRecord

Description:

* The stream content.

Applied stereotypes:

* OpenModelNotification
* triggerConditionList: invalid
* support: MANDATORY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_logRecord | LogRecord | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Each stream record may include a number of log records. CONDITION: Mandatory where there is one or more conformant log records to stream. | | | |

## Associations

### LogRecordHasHeader

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_logRecordHeader | composite | Yes | LogRecordHeader | 0..1 |
| appendlogrecord | none | No | LogRecord | 1 |

**Table 530 – Member ends for association *LogRecordHasHeader***

### LogRecordHasRecordBody

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_logRecordBody | composite | Yes | LogRecordBody | 0..1 |
| appendlogrecord | none | No | LogRecord | 1 |

**Table 531 – Member ends for association *LogRecordHasRecordBody***

### StreamAdminMonitorsStreams

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_streamMonitor | composite | Yes | StreamMonitor | 0..\* |
| streamadmincontext | none | No | StreamAdminContext | 1 |

**Table 532 – Member ends for association *StreamAdminMonitorsStreams***

### StreamContextHasAvailableStreamConnections

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_availableStream | composite | Yes | AvailableStream | 0..\* |
| streamcontext | none | No | StreamContext | 1 |

**Table 533 – Member ends for association *StreamContextHasAvailableStreamConnections***

### StreamContextHasSupportedStreamConnectionTypes

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_supportedStreamType | composite | Yes | SupportedStreamType | 0..\* |
| streamcontext | none | No | StreamContext | 1 |

**Table 534 – Member ends for association *StreamContextHasSupportedStreamConnectionTypes***

### StreamIsOfStreamConnectionType

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_supportedStreamType | none | Yes | SupportedStreamType | 1 |
| activestream | none | No | AvailableStream | 0..\* |

**Table 535 – Member ends for association *StreamIsOfStreamConnectionType***

### StreamMonitorHasDynamicStreamData

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_dynamicStreamData | composite | Yes | DynamicStreamData | 0..1 |
| streammonitor | none | No | StreamMonitor | 1 |

**Table 536 – Member ends for association *StreamMonitorHasDynamicStreamData***

### StreamMonitorMonitorsAvailableStream

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_availableStream | none | Yes | AvailableStream | 1 |
| streammonitor | none | No | StreamMonitor | 0..\* |

**Table 537 – Member ends for association *StreamMonitorMonitorsAvailableStream***

### StreamRecordIsLogRecord

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_logRecord | composite | Yes | LogRecord | 0..\* |
| streamrecord | none | No | StreamRecord | 1 |

**Table 538 – Member ends for association *StreamRecordIsLogRecord***

## Abstractions

### AlarmConditionDetectorDetailAugmentsConditionDetector

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Diagrams | measuredEntityClass |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody/TapiStreaming:LogRecordBody:\_conditionDetector" | | |

**Table 539 – Member ends for class abstraction *AlarmConditionDetectorDetailAugmentsConditionDetector***

### AugmentLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AnyClass | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 540 – Member ends for class abstraction *AugmentLogRecordBody***

### AugmentWithCompactedLogDetails

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| CompactedLogDetails | SupportedStreamType |  |
| target: "/TapiCommon:Context:\_context/TapiStreaming:StreamContext:\_streamContext/TapiStreaming:StreamContext:\_supportedStreamType" | | |

**Table 541 – Member ends for class abstraction *AugmentWithCompactedLogDetails***

### AugmentWithInformationRecordDetails

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| InformationRecordStrategy | SupportedStreamType |  |
| target: "/TapiCommon:Context:\_context/TapiStreaming:StreamContext:\_streamContext/TapiStreaming:StreamContext:\_supportedStreamType" | | |

**Table 542 – Member ends for class abstraction *AugmentWithInformationRecordDetails***

### AugmentedWithConnectionProtocolDetails

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectionProtocolDetails | SupportedStreamType |  |
| target: "/TapiCommon:Context:\_context/TapiStreaming:StreamContext:\_streamContext/TapiStreaming:StreamContext:\_supportedStreamType" | | |

**Table 543 – Member ends for class abstraction *AugmentedWithConnectionProtocolDetails***

### AvailableStreamAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AvailableStream | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 544 – Member ends for class abstraction *AvailableStreamAugmentsLogRecordBody***

### ConditionDetectorAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConditionDetector | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 545 – Member ends for class abstraction *ConditionDetectorAugmentsLogRecordBody***

### ProfileAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| Profile | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 546 – Member ends for class abstraction *ProfileAugmentsLogRecordBody***

### SipAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ServiceInterfacePoint | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 547 – Member ends for class abstraction *SipAugmentsLogRecordBody***

### StreamAdminAugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StreamAdminContext | TapiContext | Augments the base TAPI Context with StreamAdminContext model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 548 – Member ends for class abstraction *StreamAdminAugmentRootContext***

### StreamAugmentRootContext

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StreamContext | TapiContext | Augments the base TAPI Context with StreamContext model. |
| target: "/TapiCommon:Context:\_context" | | |

**Table 549 – Member ends for class abstraction *StreamAugmentRootContext***

### StreamMonitorAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| StreamMonitor | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 550 – Member ends for class abstraction *StreamMonitorAugmentsLogRecordBody***

### StreamingObjectTypeAugmentsObjectType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| StreamingObjectType   * AVAILABLE\_STREAM * SUPPORTED\_STREAM\_TYPE * STREAM\_MONITOR * CONDITION\_DETECTOR * ANY\_CLASS | DiagramsSERVICE\_INTERFACE\_POINT |
| **Comment**  Enumeration Augment. | |

**Table 551 – Member ends for enum abstraction *StreamingObjectTypeAugmentsObjectType***

### SupportedStreamTypeAugmentsLogRecordBody

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| SupportedStreamType | LogRecordBody |  |
| target: "/TapiStreaming:StreamRecord:\_streamRecord/TapiStreaming:StreamRecord:\_logRecord/TapiStreaming:LogRecord:\_logRecordBody" | | |

**Table 552 – Member ends for class abstraction *SupportedStreamTypeAugmentsLogRecordBody***

## Data Types

### ApproxDateAndTime

Description:

* 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: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where the time is only approximately known and where the event is known to have occurred after a particular time. | | | |
| spread | Spread  Default value: *AT* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates the knowledge of the time of occurrence of the event. CONDITION: Mandatory where not default. | | | |
| sourcePrecision | SourcePrecision  Default value: *UNKNOWN* | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Indicates how well the source time is synchronized with network time. CONDITION: Mandatory where not default. | | | |

**Table 553 – Attributes for data type *ApproxDateAndTime***

### LegacyProperties

Description:

* 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 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where severity is known. | | | |
| serviceAffect | ServiceAffect | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **Description:**  Some devices will indicate, from its very narrow viewpoint, whether service has been impacted or not. This property carries this detail. CONDITION: Mandatory where it is known whether the condition detected is service affecting or not. | | | |
| isAcknowledged | Boolean | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: CONDITIONAL\_MANDATORY * condition: |
| **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. CONDITION: Mandatory where there is a known state related to user acknowledgement of the condition. | | | |
| additionalAlarmInfo | String | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: OPTIONAL |
| **Description:**  Often, alarms raised by devices have additional information. This property can be used to convey this. | | | |

**Table 554 – Attributes for data type *LegacyProperties***

## Enumerations

### AlarmDetectorState

Description:

* 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 my 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.

### ConditionDetectorType

Description:

* 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.
* PM\_THRESHOLD\_DETECTOR:
  + A type of detector used for reporting threshold crossing events related to performance monitoring.

### ConnectionProtocol

Description:

* The connection protocols.

Contains Enumeration Literals:

* WEBSOCKETS:
  + WebSockets as defined at https://datatracker.ietf.org/doc/html/rfc6455.
* SSE:
  + Server Sent Events as defined at https://www.w3.org/TR/2015/REC-eventsource-20150203/.
* GNMI:
  + Google network Management Interface as specified at https://github.com/openconfig/reference/tree/master/rpc/gnmi.

### EncodingFormat

Description:

* The list of possible encoding formats.

Contains Enumeration Literals:

* JSON:
  + JavaScript Object Notation as defined at https://www.json.org/json-en.html.
* PROTOBUF:
  + Protocol Buffers as defined at github.com/protocolbuffers/protobuf.
* XML:
  + eXtensible Markup Language as defined at https://www.w3.org/standards/xml/.

### EventSource

Description:

* 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.

### LogRecordStrategy

Description:

* 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:
  + DEPRECATED Replaced by WHOLE\_ENTITY with record trigger 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:
  + DEPRECATED Replaced by WHOLE\_ENTITY with record trigger PERIODIC. A snapshot of an entity is recorded periodically regardless of whether there has been change or not.
* WHOLE\_ENTITY:
  + A record provides a snapshot of a whole entity. The record includes all properties and values whether they have changed or not.

### LogStorageStrategy

Description:

* 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.

### PerceivedSeverity

Description:

* 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.

### RecordSuppression

Description:

* Defines the record suppression strategy. Where suppression is applied a record will not be logged if it meets the supression criteria.

Contains Enumeration Literals:

* NO\_SUPPRESSION:
  + There is no record suppression.
* SUPPRESS\_EXPECTED:
  + A record will be suppressed if the value of the record is exactly as expected. The absence of a record will convey to the client that the value is as the client expects.
* DEFINED\_SUPPRESSION:
  + Suppression will follow a strategy that is complex and specified via additional detail.

### RecordTrigger

Description:

* The trigger for logging a record.

Contains Enumeration Literals:

* ON\_CHANGE:
  + A record is logged each time the value of the item to be recorded changes.
* PERIODIC:
  + A record is logged for the item on a periodic basis (independent of whether the values have changed or not).
* DEFINED\_TRIGGER:
  + The trigger will follow a strategy that is complex and specified via additional detail.

### RecordType

Description:

* 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 with 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.
* CHANGE:
  + The record includes necessary ids and only the changed parameter/parameters.
* UPDATE:
  + The record is of the whole entity where it is known to have existed before.
* CREATE:
  + The record is of the whole entity where it is known to have not existed before or not known to have existed before (it may have existed but the record has been lost and hence it appears to be new).
* INFORMATION:
  + The record contains some information.

### ServiceAffect

Description:

* 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.

### SourcePrecision

Description:

* 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.

### Spread

Description:

* 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.

### StreamState

Description:

* 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.

### StreamingObjectType

Description:

* The list of TAPI Streaming Object types/classes.

Contains Enumeration Literals:

* AVAILABLE\_STREAM:
* STREAM\_MONITOR:
* SUPPORTED\_STREAM\_TYPE:
* CONDITION\_DETECTOR:
* ANY\_CLASS:

### ValueExpectation

Description:

* Defines the value expectation where record suppression is SUPPRESS\_EXPECTED.

Contains Enumeration Literals:

* NO\_EXPECTATION:
  + There is no expected value.
* VALUE\_IS\_ZERO:
  + The expected value (of the relevant parameter or parameters) is (all) zero.
* VALUE\_IS\_SAME\_AS\_LAST:
  + The expected value (of the relevant parameter or parameters) is (all) the same as ther were for the last record opportunity.
* DEFINED\_EXPECTATION:
  + Value expectation will follow a strategy that is complex and specified via additional detail.

### ValueExpectationDither

Description:

* Defines the dither in an expected value that is allowed for the value to still be considered as expected.

Contains Enumeration Literals:

* NO\_DITHER:
  + No dither allowed.
* DEFINED\_DITHER:
  + Dither will follow a strategy that is complex and specified via additional detail.

## Primitives

# Digital Signal Rate Model

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

## Diagrams

**Figure 43 – Diagram *DsrTypes***

## Classes

## Signals

## Associations

## Abstractions

### DSTypeAugmentsLayerProtocolQualifier

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| DigitalSignalType   * GPON * OTU\_4 * IB\_QDR * SDI\_1G5 * FC\_100 * 200\_GigE * OC\_768 * STM\_16 * 10\_GigE\_LAN * IB\_DDR * GigE * OTU\_2E * XGPON * OC\_192 * SDI\_3G * 400\_GigE * 40\_GigE * FC\_800 * STM\_4 * OTU\_2 * FC\_1200 * DVB\_ASI * IB\_SDR * SBCON\_ESCON * OC\_12 * STM\_256 * OC\_3 * OTU\_3 * FC\_400 * SDI * FC\_3200 * 10\_GigE\_WAN * STM\_64 * FC\_1600 * FC\_200 * 100\_GigE * STM\_1 * OC\_48 * OTU\_1 | LayerProtocolQualifier   * UNSPECIFIED |
| **Comment**  Enumeration Augment. | |

**Table 555 – Member ends for enum abstraction *DSTypeAugmentsLayerProtocolQualifier***

## Data Types

## Enumerations

### DigitalSignalType

Contains Enumeration Literals:

* GigE:
* 10\_GigE\_LAN:
* 10\_GigE\_WAN:
* 40\_GigE:
* 100\_GigE:
* 200\_GigE:
* 400\_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:

## Primitives

# Photonic Model

Comments: Attribute which can be covered by termination type and node rule group

Comments: equalization-mode is defined in oms-general-optical-param. To be verified whether necessary or implicit in the choice of the PowerParams packages.

Comments: Note that also Booster/Preamplifier could be listed

Comments: otsi-group is the "list of OTSi contained in 1 OTSiG", each one described by common-transceiver-configured-param: otsi-carrier-frequency, tx-channel-power, rx-channel-power, rx-total-power.

Comments: IETF model foresees a transponder grouping, which is the "list of transceiver related to a transponder". TAPI Transceiver Profile is defined to specify both the capabilities (PHOT/OTSi NEP) and the configuration/state (OTSi CSEP/CEP) of transceivers.

Comments: It is assumed that MC CEP does not appear on transponder side, hence no reference from MC CEP to OtsiTerminationPac.

Comments: Amplification configuration shall be allowed on OMS CEP base. For further development.

Comments: IETF model foresees a single amplifier-params grouping listing the "parallel amplifier elements within an amplifier used to amplify different frequency ranges." TAPI Amplifier Profile is defined per "frequency-range", because the functional model (of the amplifier) is not supported in TAPI. Note that the OMS CEP defines a frequency range which could include more frequency sub-ranges separately amplified.

Comments: media-channel-groups / delta-power (Deviation from the reference carrier power defined for the OMS) could be added to MC CEP. Note that l0-types:flexi-grid-frequency-slot (RFC 9093) is equivalent to "central frequency + width".

Comments: regen-metric can augment the OTSiMC NEP of transponders, meaningful in case the transponder node is used as 3R.

Comments: Evaluate adding "bit stuffing" to OtsiConfig. ietf-optical-impairment-topology.yang grouping l0-tunnel-attributes { description "Parameters for Layer0 (WSON or Flexi-Grid) Tunnels."; leaf fec-type { type identityref { base fec-type; } description "FEC type."; } leaf termination-type { type identityref { base term-type; } description "Termination type."; } leaf bit-stuffing { type boolean; description "Bit stuffing enabled/disabled."; } }

Comments: Shall we consider also the "fiber impairments" between ROADM and its Booster/Preampli?

Comments: ITU-T G.sup39 2016/02: NRZ-DPSK RZ-DPSK NRZ-DQPSK RZ-DQPSK DP-QPSK PDM-BPSK PDM-16QAM

Comments: Explore the "integrated" provisioning of Otsi/G, i.e. directly including in the CSEP also all the Transceiver Profile parameters. This can be useful when there is not an Transceiver Profile instance matching the intent. The server controller may or may not instantiate the equivalent Transceiver Profile as provisioning result.

Comments: All the other relevant parameters are provisioned by reference to an instance of Transceiver Profile. The reference (by name) is defined in the CSEP.

Comments: OtsiaCsepTtpPac could augment a DSR CEP in case of direct photonic to DSR adaptation (i.e. no OTN layer network).

Comments: IETF foresees a choice based on equalization-mode enum {power-spectral-density; carrier-power}. TAPI could simplify with just the applicable packages, which package is present indicates the equalization mode.

Comments: IETF augments "/nw:networks/nw:network/nw:node" with - transponder list / transceiver list - regen-group, which is "List of 3R groups. Any 3R group represent a group of transponder in which an a an electrical connectivity is either in place or could be dynamically provided, to associated transponders used for 3R regeneration."

Comments: TapiDigitalOtn:OtsiaMep composed by OtuMep augmenting ConnectivityOamServicePoint. Define OtsiaMep also in TapiPhotonic, to directly augment ConnectivityOamServicePoint, and move the power thresholds there. This implies the import of TapiOam.

Comments: ietf-layer0-types-ext.yang grouping common-transceiver-configured-param { description "Capability of an optical transceiver"; leaf otsi-carrier-frequency { type frequency-thz; description "OTSi carrier frequency, equivalent to the actual configured transmitter frequency"; } leaf tx-channel-power { type dbm-t; description "The current channel transmit power"; } leaf rx-channel-power { type dbm-t; config false; description "The current channel received power "; } leaf rx-total-power { type dbm-t; config false; description "Current total received power"; } } // grouping for configured attributes out of mode

Comments: OTSiMCG CSEP is provisioned also in case OTSiMC layer is not explicitly represented on Resource side

Comments: ITU-T G.694.1 For the flexible DWDM grid, the allowed frequency slots have a - nominal central frequency (in THz) defined by: 193.1 + n × 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 × m where m is a positive integer and 12.5 is the slot width granularity in GHz.

Comments: XOR/choice

Comments: min/max central freq. and freq. step shall be mapped to SIP/CSEP/CEP spectrum/central freq. Could we use the same datatype, i.e. SpectrumBand?

Comments: IETF model foresees a "list of optical impairments on a ROADM express/add/drop path for different frequency ranges". TAPI ConnectivityImpairmentProfile is defined per "frequency-range", because the functional model (of the ROADM) is not supported in TAPI.

Comments: GNPy Transceiver data type includes the tx\_osnr, which represents the transceiver SNR penalty, in analogy with the ROADM add/drop OSNR.

Comments: oms-general-optical-params configuration shall be allowed on NEP base?

Comments: CCAMP rfc9093-bis identity modulation: DPSK (Differential Phase Shift Keying) modulation QPSK (Quadrature Phase Shift Keying) modulation DP-QPSK (Dual Polarization Quadrature Phase Shift Keying) modulation QAM8 (8-State Quadrature Amplitude Modulation) DP-QAM8 (8 symbols Dual Polarization Quadrature Amplitude Modulation) DC-DP-QAM8 (8 symbols Dual Carrier Dual Polarization Quadrature Amplitude Modulation) QAM16 (16 symbols Quadrature Amplitude Modulation) DP-QAM16 (16 symbols Dual Polarization Quadrature Amplitude Modulation) DC-DP-QAM16 (16 symbols Dual Carrier Dual Polarization Quadrature Amplitude Modulation) QAM32 (32 symbols Quadrature Amplitude Modulation) DP-QAM32 (32 symbols Dual Polarization Quadrature Amplitude Modulation) QAM64 (64 symbols Quadrature Amplitude Modulation) DP-QAM64 (64 symbols Dual Polarization Quadrature Amplitude Modulation)

Comments: min-carrier-spacing has only the capability role, not provisionable.

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

## Diagrams

**Figure 44 – Diagram *McResourceSpec***

**Figure 45 – Diagram *PhotonicProfiles***

**Figure 46 – Diagram *PhotonicTypes***

**Figure 47 – Diagram *ServiceSpec***

## Classes

### Amplification

Description:

* The CEP which includes the Amplification impairments is the CEP which better approximates the output of the amplification function.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| frequencyRange | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| ingressDirection | Boolean  Default value: *false* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| firstOfChain | Boolean | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| actualGain | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Actual gain in dB. | | | |
| actualTilt | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Actual tilt in dB. | | | |
| outVoa | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |
| inVoa | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |
| opticalOutputPower | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dBm. | | | |
| opticalInputPower | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dBm. | | | |
| \_profile | Profile | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_amplification | Amplification | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 556 – Attributes for class *Amplification***

### AmplificationConfig

Description:

* This structure is for further development and is NOT used in this version.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| targetGain | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| targetGainTilt | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| targetOutVoa | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |
| targetInVoa | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |
| opticalOutputPower | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| opticalInputPower | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerParams | PowerParams | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 557 – Attributes for class *AmplificationConfig***

### AmplificationProfile

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| frequencyRange | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| gainRange | GainRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| noiseFigureRange | NoiseFigureRange | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Noise figure range of the amplifier. Measured in dB. | | | |
| maxPower | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum output power. Measured in dBm. | | | |
| extendedGainRange | GainRange | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 558 – Attributes for class *AmplificationProfile***

### ChannelPower

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| nominalCarrierPower | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Reference channel power. OMS power after the ROADM (input of the OMS) or after the out-voa of each amplifier. Measured in dBm. | | | |

**Table 559 – Attributes for class *ChannelPower***

### CommonExplicit

Description:

* Attributes capabilities related to explicit mode of an optical transceiver.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| lineCodingBitrate | LineCoding | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Bit rate/line coding of optical tributary signal. | | | |
| maxPolarizationModeDispersion | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum acceptable accumulated polarization mode dispersion on the receiver. Measured in picoseconds per square root kilometer. | | | |
| maxChromaticDispersion | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum acceptable accumulated chromatic dispersion on the receiver. Measured in ps/nm (picoseconds per nanometer). | | | |
| chromaticAndPolarizationDispersionPenalty | CdPmdPenalty | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Optional penalty associated with a given accumulated CD and PMD. This list of triplet cd, pmd, penalty can be used to sample the function penalty = f(CD, PMD). | | | |
| maxDiffGroupDelay | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum Differential group delay of this mode for this lane. Measured in picoseconds. | | | |
| maxPolarizationDependentLossPenalty | PdlPenalty | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Optional penalty associated with the maximum acceptable accumulated polarization dependent loss. This list of pair pdl and penalty can be used to sample the function pdl = f(penalty). | | | |
| standardModulationType | StandardModulationTechnique | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Modulation type this transceiver profile can support. | | | |
| minOsnr | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Min OSNR: if received OSNR at minimum Rx-power is lower than MIN-OSNR, an increased level of bit-errors post-FEC needs to be expected. Measured in dB@0.1nm (over 0.1 nm resolution bandwidth). | | | |
| minQFactor | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Min Qfactor at FEC threshold. Measured in dB. | | | |
| baudRate | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Baud-rate the specific transceiver in the list can support. Baud-rate is the unit for symbol rate or modulation rate in symbols per second or pulses per second. It is the number of distinct symbol changes (signal events) made to the transmission medium per second in a digitally modulated signal or a line code. Measured in Bd. | | | |
| rollOff | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The roll-off factor (beta with values from 0 to 1) identifies how the real signal shape exceed the baud rate. If=0 it is exactly matching the baud rate. If=1 the signal exceeds the 50% of the baud rate at each side. | | | |
| minCarrierSpacing | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute specifies the minimum nominal difference between the carrier frequencies of two homogeneous OTSis (which have the same optical characteristics but the central frequencies) such that if they are placed next to each other the interference due to spectrum overlap between them can be considered negligible. In case of heterogeneous OTSi it is up to path computation engine to determine the minimum distance between the carrier frequency of the two adjacent OTSi. Measured in Hz. | | | |
| fecType | FecType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Available FEC. | | | |
| fecCodeRate | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  FEC code rate. | | | |
| fecThreshold | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Threshold on the BER, for which FEC is able to correct errors. | | | |
| otherProperties | NameAndValue | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 560 – Attributes for class *CommonExplicit***

### CommonOrganizationalExplicit

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| frequencyRange | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter indicates the minimum and maximum frequency for the transmitter tuning range. | | | |
| centralFrequencyStep | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter indicates the transmitter tunability grid as the distance between two adjacent carrier frequencies of the transmitter tuning range. Measured in Hz. | | | |
| txChannelPowerMin | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The minimum output power. Measured in dBm. | | | |
| txChannelPowerMax | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The maximum output power. Measured in dBm. | | | |
| rxChannelPowerMin | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The minimum input power. Measured in dBm. | | | |
| rxChannelPowerMax | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The maximum input power. Measured in dBm. | | | |
| rxTotalPowerMax | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum rx optical power for all the channels received at the interface. Measured in dBm. | | | |

**Table 561 – Attributes for class *CommonOrganizationalExplicit***

### ConnectivityImpairmentProfile

Description:

* This profile centralizes all the parameters of CCAMP ROADM add/drop/express path impairment profiles.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| frequencyRange | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| roadmPmd | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Polarization Mode Dispersion, in picoseconds per square root kilometer. | | | |
| roadmCd | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Chromatic Dispersion in ps/nm (picoseconds per nanometer). | | | |
| roadmPdl | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Polarization Dependent Loss, in dB. | | | |
| roadmInbandCrosstalk | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In-band crosstalk, or coherent crosstalk, can occur in components that can have multiple same wavelength inputs, with the inputs either routed to different output ports,or all but 1 blocked. In the case of drop path it is the total of the ingress to drop e.g. WSS and drop block crosstalk contributions. Measured in dB. | | | |
| roadmMaxloss | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add path / Sink direction: This is the maximum expected add path loss from the add/drop port input to the ROADM egress, assuming no additional add path loss is added. This is used to establish the minimum required transponder output power required to hit the ROADM egress target power levels and preventing to hit the WSS attenuation limits. If the add path contains an internal amplifier this loss value should be based on worst case expected amplifier gain due to ripple or gain uncertainty. Drop path / Source direction: The net loss from the ROADM input,to the output of the drop block. If ROADM ingress to drop path includes an amplifier, the amplifier gain reduces the net loss. This is before any additional drop path attenuation that may be required due to drop amplifier power contraints. The max value correspond to worst case expected loss, including amplifier gain ripple or uncertainty. It is the maximum output power of the drop amplifier. Measured in dB. | | | |
| roadmMinloss | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The net loss from the ROADM input, to the output of the drop block. If this ROADM ingress to drop path includes an amplifier, the amplifier gain reduces the net loss. This is before any additional drop path attenuation that may be required due to drop amplifier power contraints. The min value correspond to best case expected loss, including amplifier gain ripple or uncertainty. Measured in dB. | | | |
| roadmTyploss | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| roadmPmin | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  If the drop path has additional loss that is added, for example, to hit target power levels into a drop path amplifier, or simply, to reduce the power of a strong carrier (due to ripple, for example), then the use of the ROADM input power levels and the above drop losses is not appropriate. This parameter corresponds to the min per carrier power levels expected at the output of the drop block. Measured in dBm. | | | |
| roadmPmax | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add path / Sink direction: This is the maximum (per carrier) power level permitted at the add block input ports, that can be handled by the ROADM node. This may reflect either add amplifier power contraints or WSS adjustment limits. Higher power transponders would need to have their launch power reduced to this value or lower. Drop pah / Source direction: If the drop path has additional loss that is added, for example, to hit target power levels into a drop path amplifier, or simply, to reduce the power of a strong carrier (due to ripple,for example), then the use of the ROADM input power levels and the above drop losses is not appropriate. This parameter corresponds to the best case per carrier power levels expected at the output of the drop block. Measured in dBm. | | | |
| roadmPtyp | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  If the drop path has additional loss that is added, for example, to hit target power levels into a drop path amplifier, or simply, to reduce the power of a strong carrier (due to ripple, for example), then the use of the ROADM input power levels and the above drop losses is not appropriate. This parameter corresponds to the typical case per carrier power levels expected at the output of the drop block. Measured in dBm. | | | |
| roadmOsnr | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Optical Signal-to-Noise Ratio (OSNR). Add path / Sink direction: If the add path contains the ability to adjust the carrier power levels into an add path amplifier (if present) to a target value, this reflects the OSNR contribution of the add amplifier assuming this target value is obtained. The worst case OSNR based on the input power and NF calculation method, and this value, should be used (if both are defined). Drop path / Source direction: Expected OSNR contribution of the drop path amplifier (if present) for the case of additional drop path loss (before this amplifier) in order to hit a target power level (per carrier). If both, - the OSNR based on the ROADM input power level (Pcarrier = Pref+10Log(carrier-baudrate/ref-baud) + delta-power) and the input inferred NF(NF.drop), and - this OSNR value, are defined, the minimum value between these two should be used. Measured in dB@0.1nm (over 0.1 nm resolution bandwidth). | | | |
| roadmNoiseFigure | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add path / Sink direction: If the add path contains an amplifier, this is the noise figure of that amplifier inferred to the add port. This permits add path OSNR calculation based on the input power levels to the add block without knowing the ROADM path losses to the add amplifier. Drop path / Source direction: If the drop path contains an amplifier, this is the noise figure of that amplifier, inferred to the ROADM ingress port. This permits to determine amplifier OSNR contribution without having to specify the ROADM node's losses to that amplifier. This applies for the case of no additional drop path loss, before the amplifier, in order to reduce the power of the carriers to a target value. Measured in dB. | | | |

**Table 562 – Attributes for class *ConnectivityImpairmentProfile***

### FiberProfile

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| typeVariety | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| lossCoef | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Loss coefficient of the fiber in dB/Km. | | | |
| fiberPmd | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Polarization Mode Dispersion, in picoseconds per square root kilometer. | | | |
| effectiveArea | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Effective area of the fiber, in square meters. | | | |

**Table 563 – Attributes for class *FiberProfile***

### FlexiGridConfigPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| n | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  RFC 9093: The given value 'N' is used to determine the nominal central frequency. The nominal central frequency, 'f', is defined by: - f = 193100.000 GHz + N x channel spacing (measured in GHz), where 193100.000 GHz (193.100000 THz) is the ITU-T 'anchor frequency' for transmission over the DWDM grid, and where 'channel spacing' is defined by the flexi-ch-spc-type. Note that the term 'channel spacing' can be substituted by the term 'nominal central frequency granularity' defined in clause 8 of ITU-T G.694.1. Signed. | | | |
| m | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  RFC 9093: The given value 'M' is used to determine the slot width. A slot width is defined by: - slot width = M x SWG (measured in GHz), where SWG (Slot Width Granularity) is defined by the flexi-slot-width-granularity. | | | |
| flexiChSpcType | FlexiChannelSpacing | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| flexiSlotWidthGranularity | FlexiSlotWidthGranularity | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 564 – Attributes for class *FlexiGridConfigPac***

### FlexiGridPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| n | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  RFC 9093: The given value 'N' is used to determine the nominal central frequency. The nominal central frequency, 'f', is defined by: - f = 193100.000 GHz + N x channel spacing (measured in GHz), where 193100.000 GHz (193.100000 THz) is the ITU-T 'anchor frequency' for transmission over the DWDM grid, and where 'channel spacing' is defined by the flexi-ch-spc-type. Note that the term 'channel spacing' can be substituted by the term 'nominal central frequency granularity' defined in clause 8 of ITU-T G.694.1. Signed. | | | |
| m | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  RFC 9093: The given value 'M' is used to determine the slot width. A slot width is defined by: - slot width = M x SWG (measured in GHz), where SWG (Slot Width Granularity) is defined by the flexi-slot-width-granularity. | | | |
| flexiChSpcType | FlexiChannelSpacing | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| flexiSlotWidthGranularity | FlexiSlotWidthGranularity | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 565 – Attributes for class *FlexiGridPac***

### ImpairmentRouteEntry

Description:

* An ImpairmentRouteEntry can be exclusively either an OtsConcentratedLoss or an OtsFiberSpanImpairments.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otsConcentratedLoss | OtsConcentratedLoss | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsFiberSpanImpairments | OtsFiberSpanImpairments | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 566 – Attributes for class *ImpairmentRouteEntry***

### McBandwidthConfigPac

Description:

* MC configuration based on bandwidth, with the actual position in the spectrum is delegated to the server controller.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrumBandwidth | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Unidimensional in Hz. | | | |
| edgeFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 567 – Attributes for class *McBandwidthConfigPac***

### McConnectionEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_spectrumPac | SpectrumPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_flexiGridPac | FlexiGridPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerMeasurementPac | PowerMeasurementPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 568 – Attributes for class *McConnectionEndPointSpec***

### McFlexiGridConfigPac

Description:

* ITU-T G.694.1 Spectral grids for WDM applications: DWDM frequency grid. The flexi-grid-frequency-slot (RFC 9093) defines the nominal central frequency and its slot width in terms of N, M.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_flexiGridConfigPac | FlexiGridConfigPac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 569 – Attributes for class *McFlexiGridConfigPac***

### McSpectrumConfigPac

Description:

* MC configuration based on spectrum specification.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrum | FrequencyRange | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| edgeFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 570 – Attributes for class *McSpectrumConfigPac***

### McgConnectivityServiceEndPointSpec

Description:

* 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), then a unique/top CSEP instance (not referring to any SIP, with a MC LPC including McgConnectivityServiceEndPointSpec with specified only the number of MCs) refers to the CSEP instances (one per each MEDIA Link, each one referring to one SIP, each one with a MC LPC including McgConnectivityServiceEndPointSpec composing only one MC config pac), through the CSEPHasAssembledCSEPs association. 2) In case of MCG provisioning based on single SIP, then the model is compacted into only one CSEP instance, with a MC LPC including McgConnectivityServiceEndPointSpec, which composes one or more MC config pacs).

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| numberOfMc | Integer  Default value: *1* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_mcSpectrumConfigPac | McSpectrumConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_mcBandwidthConfigPac | McBandwidthConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_mcFlexiGridConfigPac | McFlexiGridConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 571 – Attributes for class *McgConnectivityServiceEndPointSpec***

### OmsConnectionEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_spectrumPac | SpectrumPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_flexiGridPac | FlexiGridPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_amplification | Amplification | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_omsGeneralOpticalParams | OmsGeneralOpticalParams | 0..2 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerMeasurementPac | PowerMeasurementPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 572 – Attributes for class *OmsConnectionEndPointSpec***

### OmsGeneralOpticalParams

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| frequency-range | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| ingressDirection | Boolean  Default value: *true* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  For unidirectional CEPs there may be at most one oms general optical params. The ingress direction is true for a SINK CEP and false for a SOURCE CEP. For bidirectional CEPs there may be at most two oms general optical parms. If there are two one must have the ingress direction set to true and the other must have the ingress direction set to false. If the ingress direction is true the params correspond to the SINK function of the CEP and if it is false they correspond to the SOURCE function of the CEP. | | | |
| generalizedSnr | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Generalized SNR. Measured in dB@0.1nm (over 0.1 nm resolution bandwidth). | | | |
| \_powerParams | PowerParams | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 573 – Attributes for class *OmsGeneralOpticalParams***

### OtsConcentratedLoss

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| concentratedLoss | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Concentrated loss, in dB. | | | |

**Table 574 – Attributes for class *OtsConcentratedLoss***

### OtsFiberSpanImpairments

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| fiberTypeVariety | String | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Fiber type. | | | |
| pmd | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Polarization Mode Dispersion in picoseconds per square root kilometer. | | | |
| length | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Length of the fiber in Km. | | | |
| lossCoef | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Loss coefficient of the fiber in dB/Km. | | | |
| totalLoss | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Includes all losses: Fiber loss and connector in and connector out losses, in dB. | | | |
| connectorIn | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Loss by the input connector, in dB. | | | |
| connectorOut | Real | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Loss by the output connector, in dB. | | | |

**Table 575 – Attributes for class *OtsFiberSpanImpairments***

### OtsImpairments

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_impairmentRouteEntry | ImpairmentRouteEntry | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| ingressDirection | Boolean  Default value: *true* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  For unidirectional CEPs there may be at most one ots impairments. The ingress direction is true for a SINK CEP and false for a SOURCE CEP. For bidirectional CEPs there may be at most two ots impairments. If there are two one must have the ingress direction set to true and the other must have the ingress direction set to false. If the ingress direction is true the params correspond to the SINK function of the CEP and if it is false they correspond to the SOURCE function of the CEP. | | | |

**Table 576 – Attributes for class *OtsImpairments***

### OtsMediaConnectionEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_spectrumPac | SpectrumPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_flexiGridPac | FlexiGridPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsImpairments | OtsImpairments | 0..2 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerMeasurementPac | PowerMeasurementPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 577 – Attributes for class *OtsMediaConnectionEndPointSpec***

### OtsiConfigPac

Description:

* Configuration parameters regarding the single O/E/O transmission function.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| centralFrequency | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave. Measured in Hz. | | | |
| laserControl | LaserControlType | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsiThresholdPowerConfig | OtsiThresholdPowerConfig | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 578 – Attributes for class *OtsiConfigPac***

### OtsiMcBandwidthConfigPac

Description:

* OTSiMC configuration based on bandwidth, with the actual position in the spectrum is delegated to the server controller.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrumBandwidth | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Unidimensional in Hz. | | | |
| centerFrequencyOffset | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Offset where it is expected to find the signal in the MC. (unidimensional in Hz). | | | |
| centerFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| edgeFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| nonAdjacentSpectrum | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 579 – Attributes for class *OtsiMcBandwidthConfigPac***

### OtsiMcConnectionEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otsiTerminationPac | OtsiTerminationPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_spectrumPac | SpectrumPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Mandatory if the CEP is not terminated, optional if terminated. | | | |
| \_flexiGridPac | FlexiGridPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerMeasurementPac | PowerMeasurementPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 580 – Attributes for class *OtsiMcConnectionEndPointSpec***

### OtsiMcFlexiGridConfigPac

Description:

* ITU-T G.694.1 Spectral grids for WDM applications: DWDM frequency grid. The flexi-grid-frequency-slot (RFC 9093) defines the nominal central frequency and its slot width in terms of N, M.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_flexiGridConfigPac | FlexiGridConfigPac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 581 – Attributes for class *OtsiMcFlexiGridConfigPac***

### OtsiMcFrequencyConfigPac

Description:

* OTSiMC configuration based on central frequency specification.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| centralFrequency | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave. Measured in Hz. | | | |
| centerFrequencyOffset | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Offset where it is expected to find the signal in the MC. (unidimensional in Hz, signed). | | | |
| spectrumBandwidth | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Unidimensional in Hz | | | |
| centerFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| edgeFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 582 – Attributes for class *OtsiMcFrequencyConfigPac***

### OtsiMcSpectrumConfigPac

Description:

* OTSiMC configuration based on spectrum specification.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrum | FrequencyRange | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| centerFrequencyOffset | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Offset where it is expected to find the signal in the MC. (unidimensional in Hz). | | | |
| centerFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| edgeFrequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementConfigPac | PowerManagementConfigPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 583 – Attributes for class *OtsiMcSpectrumConfigPac***

### OtsiMcgConnectivityServiceEndPointSpec

Description:

* 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: are analogous to MCG provisioning scenarios. OtsiMcBandwidthConfigPac, OtsiMcSpectrumConfigPac and OtsiMcFrequencyConfigPac are mutually exclusive.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otsiMcBandwidthConfigPac | OtsiMcBandwidthConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsiMcSpectrumConfigPac | OtsiMcSpectrumConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsiMcFrequencyConfigPac | OtsiMcFrequencyConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| numberOfOtsiMc | Integer  Default value: *1* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsiMcFlexiGridConfigPac | OtsiMcFlexiGridConfigPac | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 584 – Attributes for class *OtsiMcgConnectivityServiceEndPointSpec***

### OtsiRoutingSpec

Description:

* This structure is for further development and is NOT used in this version.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| opticalRoutingStrategy | OpticalRoutingStrategy | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 585 – Attributes for class *OtsiRoutingSpec***

### OtsiTerminationPac

Description:

* Present in case of terminated OTSiMC CEP, i.e. including O/E/O function.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| selectedCentralFrequency | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The central frequency of the laser. It is the oscillation frequency of the corresponding electromagnetic wave. Measured in Hz. | | | |
| selectedSpectrum | FrequencyRange | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| laserProperties | LaserProperties | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Laser properties. | | | |

**Table 586 – Attributes for class *OtsiTerminationPac***

### OtsiThresholdPowerConfig

Description:

* This pac includes power management constraints.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| totalPowerWarnThresholdUpper | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Allows to configure the upper power threshold which is expected to be different from Default, but within the Min and Max values specified by capability. | | | |
| totalPowerWarnThresholdLower | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 capability. | | | |

**Table 587 – Attributes for class *OtsiThresholdPowerConfig***

### OtsiaConnectivityServiceEndPointSpec

Description:

* OTU/OTSiG provisioning scenarios: 1) In case of ODU/OTU/OTSiG provisioning based on multiple SIPs (e.g. more line ports each one potentially supporting a single OTSi), then the unique/top CSEP instance (not referring to any SIP, with an OTSiMC LPC including OtsiaCsepTtpSpec with specified only the number of OTSis) refers to the CSEP instances (one per each MEDIA Link, each one referring to one SIP, each one with an OTSiMC LPC including OtsiaCsepTtpSpec composing only one OTSi config pac), through the CSEPHasAssembledCSEPs association. 2) In case of ODU/OTU/OTSiG provisioning based on single SIP, then the model is compacted into only one CSEP instance, with an OTSiMC LPC including OtsiaCsepTtpSpec which composes one or more OTSi config pacs).

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otsiConfig | OtsiConfigPac | 1..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| numberOfOTSi | Integer  Default value: *1* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| totalPowerWarnThresholdUpper | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Allows to configure the upper power threshold on whole Assembly scope. | | | |
| totalPowerWarnThresholdLower | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Allows to configure the lower power threshold on whole Assembly scope. | | | |

**Table 588 – Attributes for class *OtsiaConnectivityServiceEndPointSpec***

### PhotonicMediaNodeEdgePointSpec

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NA
* objectDeletionNotification: NA
* OpenModelClass
* support: CONDITIONAL\_MANDATORY
* condition: OTSiA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_spectrumCapabilityPac | SpectrumCapabilityPac | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementCapabilityPac | PowerManagementCapabilityPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_totalPowerThresholdPac | TotalPowerThresholdPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 589 – Attributes for class *PhotonicMediaNodeEdgePointSpec***

### PhotonicMediaServiceInterfacePointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_spectrumCapabilityPac | SpectrumCapabilityPac | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_powerManagementCapabilityPac | PowerManagementCapabilityPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_totalPowerThresholdPac | TotalPowerThresholdPac | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 590 – Attributes for class *PhotonicMediaServiceInterfacePointSpec***

### PowerManagementCapabilityPac

Description:

* This pac includes power management capabilities.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrum | FrequencyRange | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| supportableMaxOutputPower | PowerProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter exposes the maximum output power supported. | | | |
| supportableMinOutputPower | PowerProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter exposes the minimum output power supported. | | | |
| tolerableMaxInputPower | PowerProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter exposes the maximum input power tolerated. | | | |
| tolerableMinInputPower | PowerProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This parameter exposes the minimum input power tolerated. | | | |

**Table 591 – Attributes for class *PowerManagementCapabilityPac***

### PowerManagementConfigPac

Description:

* This pac includes power management constraints.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| maxOutputPower | PowerProperties | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add/drop ROADM port: This parameter shall be used to specify the maximum 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. Transceiver: the transceiver max launch (TX) power. This specifies constraints related to power that the transceiver should guarantee. | | | |
| minOutputPower | PowerProperties | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add/drop ROADM port: This parameter shall be used to specify the minimum 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. Transceiver: the transceiver min launch (TX) power. This specifies constraints related to power that the transceiver should guarantee. | | | |
| maxInputPower | PowerProperties | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add/drop ROADM port: This parameter shall be used to specify the maximum 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. Transceiver: the transceiver max launch (TX) power. This specifies constraints related to power that the transceiver should guarantee. This parameter conveys the attached transceiver max launch (TX) power (expected from the transceiver). This specifies constraints related to power tolerance at the input. | | | |
| minInputPower | PowerProperties | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Add/drop ROADM port: This parameter shall be used to specify the minimum 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. Transceiver: the transceiver min launch (TX) power. This specifies constraints related to power that the transceiver should guarantee. This parameter conveys the attached transceiver min launch (TX) power (expected from the transceiver). This specifies constraints related to power tolerance at the input. | | | |

**Table 592 – Attributes for class *PowerManagementConfigPac***

### PowerMeasurementPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| measuredInputPower | PowerProperties | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| measuredOutputPower | PowerProperties | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 593 – Attributes for class *PowerMeasurementPac***

### PowerParams

Description:

* Optical power or PSD after the ROADM or after the out-voa.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_powerSpectralDensity | PowerSpectralDensity | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_channelPower | ChannelPower | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 594 – Attributes for class *PowerParams***

### PowerSpectralDensity

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| nominalPowerSpectralDensity | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Reference power spectral density after the ROADM or after the out-voa. Typical value : 3.9 E-14, resolution 0.1nW/MHz Measured in W/Hz. | | | |

**Table 595 – Attributes for class *PowerSpectralDensity***

### RegenMetric

Description:

* This structure is for further development and is NOT used in this version.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| regenMetric | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 596 – Attributes for class *RegenMetric***

### SpectrumCapabilityPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| supportableSpectrum | SpectrumBand | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| availableSpectrum | SpectrumBand | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| occupiedSpectrum | SpectrumBand | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 597 – Attributes for class *SpectrumCapabilityPac***

### SpectrumPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| occupiedSpectrum | FrequencyRange | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| localId  Inherited: *TapiCommon::ObjectClasses::LocalClass::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  Inherited: *TapiCommon::ObjectClasses::LocalClass::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. | | | |

**Table 598 – Attributes for class *SpectrumPac***

### TotalPowerThresholdPac

Description:

* Indication with severity warning raised when a total power value measured is above the threshold.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| spectrum | FrequencyRange | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| totalPowerUpperWarnThresholdDefault | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the default threshold that was set | | | |
| totalPowerUpperWarnThresholdMin | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the lower threshold that was set | | | |
| totalPowerUpperWarnThresholdMax | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the upper threshold that was set | | | |
| totalPowerLowerWarnThresholdDefault | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the default threshold that was set | | | |
| totalPowerLowerWarnThresholdMax | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the upper threshold that was set | | | |
| totalPowerLowerWarnThresholdMin | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Can read the value of the lower threshold that was set | | | |

**Table 599 – Attributes for class *TotalPowerThresholdPac***

### TransceiverExplicit

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_commonOrganizationalExplicit | CommonOrganizationalExplicit | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_commonExplicit | CommonExplicit | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_supportedStandardApplicationCode | Profile | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_supportedOrganizationalMode | Profile | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 600 – Attributes for class *TransceiverExplicit***

### TransceiverOrganizational

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| operationalMode | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Organization/vendor specific mode that guarantees interoperability, reference ITU-T G.698.2 (11/2018). | | | |
| organizationIdentifier | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Vendor/organization identifier that uses a private mode out of already defined in G.698.2 ITU-T application-code (RFC 7581). | | | |
| \_commonOrganizationalExplicit | CommonOrganizationalExplicit | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 601 – Attributes for class *TransceiverOrganizational***

### TransceiverProfile

Description:

* The referenced specific profiles are mutually exclusive.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_transceiverStandardProfile | TransceiverStandard | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_transceiverOrganizationalProfile | TransceiverOrganizational | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_transceiverExplicitProfile | TransceiverExplicit | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 602 – Attributes for class *TransceiverProfile***

### TransceiverStandard

Description:

* The standard application identifier.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| applicationCodeRec | StandardApplicationCodeRec | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The ITU-T recommendation which defines the application code format. | | | |
| applicationCode | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The standard application code as defined in the ITU-T Recommendation referenced in application code rec. | | | |

**Table 603 – Attributes for class *TransceiverStandard***

### TransceiverTerminationType

Description:

* Describes whether the transponder can be used in an Optical Tunnel termination configuration or in a 3R configuration (or both).

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| transceiverTerminationType | TransceiverTerminationType | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 604 – Attributes for class *TransceiverTerminationType***

## Signals

## Associations

### AmplificationConfigHasPowerParams

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerParams | composite | Yes | PowerParams | 0..1 |
| amplificationconfig | none | No | AmplificationConfig | 1 |

**Table 605 – Member ends for association *AmplificationConfigHasPowerParams***

### AmplificationFunctionHasProfile

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_profile | none | Yes | Profile | 0..1 |
| amplification | none | No | Amplification | 1 |

**Table 606 – Member ends for association *AmplificationFunctionHasProfile***

### ExplicitModeHasCommonExplicitMode

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_commonExplicit | composite | Yes | CommonExplicit | 1 |
| explicitmode | none | No | TransceiverExplicit | 1 |

**Table 607 – Member ends for association *ExplicitModeHasCommonExplicitMode***

### ExplicitModeHasCommonMode

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_commonOrganizationalExplicit | composite | Yes | CommonOrganizationalExplicit | 0..1 |
| explicitmode | none | No | TransceiverExplicit | 1 |

**Table 608 – Member ends for association *ExplicitModeHasCommonMode***

### ImpairmentRouteEntryIsOtsConcentratedLoss

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsConcentratedLoss | composite | Yes | OtsConcentratedLoss | 0..1 |
| impairmentcontribution | none | No | ImpairmentRouteEntry | 1 |

**Table 609 – Member ends for association *ImpairmentRouteEntryIsOtsConcentratedLoss***

### ImpairmentRouteEntryIsOtsFiberSpan

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsFiberSpanImpairments | composite | Yes | OtsFiberSpanImpairments | 0..1 |
| impairmentrouteentry | none | No | ImpairmentRouteEntry | 1 |

**Table 610 – Member ends for association *ImpairmentRouteEntryIsOtsFiberSpan***

### McBandwidthConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| mediachannelbwconfigpac | none | No | McBandwidthConfigPac | 1 |

**Table 611 – Member ends for association *McBandwidthConfigPacHasPowerConfigPac***

### McCepHasFlexiGridPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridPac | composite | Yes | FlexiGridPac | 0..1 |
| mcconnectionendpointspec | none | No | McConnectionEndPointSpec | 1 |

**Table 612 – Member ends for association *McCepHasFlexiGridPac***

### McCepHasPowerPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerMeasurementPac | composite | Yes | PowerMeasurementPac | 0..1 |
| mcconnectionendpointspec | none | No | McConnectionEndPointSpec | 1 |

**Table 613 – Member ends for association *McCepHasPowerPac***

### McCepHasSpectrumPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumPac | composite | Yes | SpectrumPac | 0..1 |
| mcconnectionendpointspec | none | No | McConnectionEndPointSpec | 1 |

**Table 614 – Member ends for association *McCepHasSpectrumPac***

### McGridConfigPacHasFlexiGridConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridConfigPac | composite | Yes | FlexiGridConfigPac | 1 |
| mcgridconfigpac | none | No | McFlexiGridConfigPac | 1 |

**Table 615 – Member ends for association *McGridConfigPacHasFlexiGridConfigPac***

### McGridConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| mcgridconfigpac | none | No | McFlexiGridConfigPac | 1 |

**Table 616 – Member ends for association *McGridConfigPacHasPowerConfigPac***

### McSpectrumConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| mediachannelconfigpac | none | No | McSpectrumConfigPac | 1 |

**Table 617 – Member ends for association *McSpectrumConfigPacHasPowerConfigPac***

### McgCsepHasBandwidthConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mcBandwidthConfigPac | composite | Yes | McBandwidthConfigPac | 0..\* |
| mcgconnectivityserviceendpointspec | none | No | McgConnectivityServiceEndPointSpec | 1 |

**Table 618 – Member ends for association *McgCsepHasBandwidthConfigPac***

### McgCsepHasFlexiGridConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mcFlexiGridConfigPac | composite | Yes | McFlexiGridConfigPac | 0..\* |
| mcgconnectivityserviceendpointspec | none | No | McgConnectivityServiceEndPointSpec | 1 |

**Table 619 – Member ends for association *McgCsepHasFlexiGridConfigPac***

### McgCsepHasSpectrumConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_mcSpectrumConfigPac | composite | Yes | McSpectrumConfigPac | 0..\* |
| mcgconnectivityserviceendpointspec | none | No | McgConnectivityServiceEndPointSpec | 1 |

**Table 620 – Member ends for association *McgCsepHasSpectrumConfigPac***

### NextAmplificationFunction

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_amplification | none | Yes | Amplification | 0..\* |
| amplification | none | No | Amplification | 1 |

**Table 621 – Member ends for association *NextAmplificationFunction***

### OmsCepHasAmplifiers

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_amplification | composite | Yes | Amplification | 0..\* |
| omsconnectionendpointspec | none | No | OmsConnectionEndPointSpec | 1 |

**Table 622 – Member ends for association *OmsCepHasAmplifiers***

### OmsCepHasFlexiGridPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridPac | composite | Yes | FlexiGridPac | 0..\* |
| omsconnectionendpointspec | none | No | OmsConnectionEndPointSpec | 1 |

**Table 623 – Member ends for association *OmsCepHasFlexiGridPac***

### OmsCepHasOmsGeneralOpticalParams

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_omsGeneralOpticalParams | composite | Yes | OmsGeneralOpticalParams | 0..2 |
| omsconnectionendpointspec | none | No | OmsConnectionEndPointSpec | 1 |

**Table 624 – Member ends for association *OmsCepHasOmsGeneralOpticalParams***

### OmsCepHasPowerPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerMeasurementPac | composite | Yes | PowerMeasurementPac | 0..1 |
| omsconnectionendpointspec | none | No | OmsConnectionEndPointSpec | 1 |

**Table 625 – Member ends for association *OmsCepHasPowerPac***

### OmsCepHasSpectrumPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumPac | none | Yes | SpectrumPac | 0..\* |
| omsconnectionendpointspec | none | No | OmsConnectionEndPointSpec | 1 |

**Table 626 – Member ends for association *OmsCepHasSpectrumPac***

### OmsGeneralOptParamsHasPowerParams

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerParams | composite | Yes | PowerParams | 0..1 |
| omsgeneralopticalparams | none | No | OmsGeneralOpticalParams | 1 |

**Table 627 – Member ends for association *OmsGeneralOptParamsHasPowerParams***

### OrganizationalModeHasCommonMode

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_commonOrganizationalExplicit | composite | Yes | CommonOrganizationalExplicit | 0..1 |
| organizationalmode | none | No | TransceiverOrganizational | 1 |

**Table 628 – Member ends for association *OrganizationalModeHasCommonMode***

### OtsImpairmentRoute

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_impairmentRouteEntry | composite | Yes | ImpairmentRouteEntry | 0..\* |
| otsimpairments | none | No | OtsImpairments | 1 |

**Table 629 – Member ends for association *OtsImpairmentRoute***

### OtsMediaCepHasFlexiGridPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridPac | composite | Yes | FlexiGridPac | 0..\* |
| otsmediaconnectionendpointspec | none | No | OtsMediaConnectionEndPointSpec | 1 |

**Table 630 – Member ends for association *OtsMediaCepHasFlexiGridPac***

### OtsMediaCepHasOtsImpairments

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsImpairments | composite | Yes | OtsImpairments | 0..2 |
| otsmediaconnectionendpointspec | none | No | OtsMediaConnectionEndPointSpec | 1 |

**Table 631 – Member ends for association *OtsMediaCepHasOtsImpairments***

### OtsMediaCepHasPowerPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerMeasurementPac | composite | Yes | PowerMeasurementPac | 0..1 |
| otsmediaconnectionendpointspec | none | No | OtsMediaConnectionEndPointSpec | 1 |

**Table 632 – Member ends for association *OtsMediaCepHasPowerPac***

### OtsMediaCepHasSpectrumPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumPac | composite | Yes | SpectrumPac | 0..\* |
| otsmediaconnectionendpointspec | none | No | OtsMediaConnectionEndPointSpec | 1 |

**Table 633 – Member ends for association *OtsMediaCepHasSpectrumPac***

### OtsiConfigHasThresholdPowerConfig

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiThresholdPowerConfig | composite | Yes | OtsiThresholdPowerConfig | 0..1 |
| otsiconfig | none | No | OtsiConfigPac | 1 |

**Table 634 – Member ends for association *OtsiConfigHasThresholdPowerConfig***

### OtsiConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| otsiconfigpac | none | No | OtsiConfigPac | 1 |

**Table 635 – Member ends for association *OtsiConfigPacHasPowerConfigPac***

### OtsiMcBandwidthConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| otsimcbwconfigpac | none | No | OtsiMcBandwidthConfigPac | 1 |

**Table 636 – Member ends for association *OtsiMcBandwidthConfigPacHasPowerConfigPac***

### OtsiMcCepHasFlexiGridPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridPac | composite | Yes | FlexiGridPac | 0..1 |
| otsimcconnectionendpointspec | none | No | OtsiMcConnectionEndPointSpec | 1 |

**Table 637 – Member ends for association *OtsiMcCepHasFlexiGridPac***

### OtsiMcCepHasPowerPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerMeasurementPac | composite | Yes | PowerMeasurementPac | 0..1 |
| otsimcconnectionendpointspec | none | No | OtsiMcConnectionEndPointSpec | 1 |

**Table 638 – Member ends for association *OtsiMcCepHasPowerPac***

### OtsiMcCepHasSpectrumPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumPac | composite | Yes | SpectrumPac | 0..1 |
| otsimcconnectionendpointspec | none | No | OtsiMcConnectionEndPointSpec | 1 |

**Table 639 – Member ends for association *OtsiMcCepHasSpectrumPac***

### OtsiMcCepHasTerminationPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiTerminationPac | composite | Yes | OtsiTerminationPac | 0..1 |
| otsimcconnectionendpointspec | none | No | OtsiMcConnectionEndPointSpec | 1 |

**Table 640 – Member ends for association *OtsiMcCepHasTerminationPac***

### OtsiMcFreqConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| otsimcfreqconfigpac | none | No | OtsiMcFrequencyConfigPac | 1 |

**Table 641 – Member ends for association *OtsiMcFreqConfigPacHasPowerConfigPac***

### OtsiMcGridConfigPacHasFlexiGridConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_flexiGridConfigPac | composite | Yes | FlexiGridConfigPac | 1 |
| otsimcgridconfigpac | none | No | OtsiMcFlexiGridConfigPac | 1 |

**Table 642 – Member ends for association *OtsiMcGridConfigPacHasFlexiGridConfigPac***

### OtsiMcGridConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| otsimcgridconfigpac | none | No | OtsiMcFlexiGridConfigPac | 1 |

**Table 643 – Member ends for association *OtsiMcGridConfigPacHasPowerConfigPac***

### OtsiMcSpectrumConfigPacHasPowerConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementConfigPac | composite | Yes | PowerManagementConfigPac | 0..1 |
| otsimcconfigpac | none | No | OtsiMcSpectrumConfigPac | 1 |

**Table 644 – Member ends for association *OtsiMcSpectrumConfigPacHasPowerConfigPac***

### OtsiMcgCsepHasBandwidthConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiMcBandwidthConfigPac | composite | Yes | OtsiMcBandwidthConfigPac | 0..\* |
| otsimcgconnectivityserviceendpointspec | none | No | OtsiMcgConnectivityServiceEndPointSpec | 1 |

**Table 645 – Member ends for association *OtsiMcgCsepHasBandwidthConfigPac***

### OtsiMcgCsepHasFlexiGridConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiMcFlexiGridConfigPac | composite | Yes | OtsiMcFlexiGridConfigPac | 0..\* |
| otsimcgconnectivityserviceendpointspec | none | No | OtsiMcgConnectivityServiceEndPointSpec | 1 |

**Table 646 – Member ends for association *OtsiMcgCsepHasFlexiGridConfigPac***

### OtsiMcgCsepHasFreqConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiMcFrequencyConfigPac | composite | Yes | OtsiMcFrequencyConfigPac | 0..\* |
| otsimcgconnectivityserviceendpointspec | none | No | OtsiMcgConnectivityServiceEndPointSpec | 1 |

**Table 647 – Member ends for association *OtsiMcgCsepHasFreqConfigPac***

### OtsiMcgCsepHasSpectrumConfigPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiMcSpectrumConfigPac | composite | Yes | OtsiMcSpectrumConfigPac | 0..\* |
| otsimcgconnectivityserviceendpointspec | none | No | OtsiMcgConnectivityServiceEndPointSpec | 1 |

**Table 648 – Member ends for association *OtsiMcgCsepHasSpectrumConfigPac***

### OtsiaCsepHasOtsiConfig

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiConfig | composite | Yes | OtsiConfigPac | 1..\* |
| otsiacsepttppac | none | No | OtsiaConnectivityServiceEndPointSpec | 1 |

**Table 649 – Member ends for association *OtsiaCsepHasOtsiConfig***

### PhoMediaSipHasMcPoolPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumCapabilityPac | composite | Yes | SpectrumCapabilityPac | 1 |
| smcserviceinterfacepoint | none | No | PhotonicMediaServiceInterfacePointSpec | 1 |

**Table 650 – Member ends for association *PhoMediaSipHasMcPoolPac***

### PhoMediaSipHasPowerCapabilityPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementCapabilityPac | composite | Yes | PowerManagementCapabilityPac | 0..\* |
| mediachannelpoolcapabilitypac | none | No | PhotonicMediaServiceInterfacePointSpec | 1 |

**Table 651 – Member ends for association *PhoMediaSipHasPowerCapabilityPac***

### PhoMediaSipHasPowerThreshold

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_totalPowerThresholdPac | composite | Yes | TotalPowerThresholdPac | 0..\* |
| photonicmediaserviceinterfacepointspec | none | No | PhotonicMediaServiceInterfacePointSpec | 1 |

**Table 652 – Member ends for association *PhoMediaSipHasPowerThreshold***

### PhotonicMediaNepHasPowerPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerManagementCapabilityPac | composite | Yes | PowerManagementCapabilityPac | 0..\* |
| photonicmedianodeedgepointspec | none | No | PhotonicMediaNodeEdgePointSpec | 1 |

**Table 653 – Member ends for association *PhotonicMediaNepHasPowerPac***

### PhotonicMediaNepHasPowerThrPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_totalPowerThresholdPac | composite | Yes | TotalPowerThresholdPac | 0..\* |
| photonicmedianodeedgepointspec | none | No | PhotonicMediaNodeEdgePointSpec | 1 |

**Table 654 – Member ends for association *PhotonicMediaNepHasPowerThrPac***

### PhotonicMediaNepHasSpectrumCapabilityPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_spectrumCapabilityPac | composite | Yes | SpectrumCapabilityPac | 1 |
| photonicmedianodeedgepointspec | none | No | PhotonicMediaNodeEdgePointSpec | 1 |

**Table 655 – Member ends for association *PhotonicMediaNepHasSpectrumCapabilityPac***

### PowerParamsHasChannelPower

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_channelPower | composite | Yes | ChannelPower | 0..1 |
| powerparams | none | No | PowerParams | 1 |

**Table 656 – Member ends for association *PowerParamsHasChannelPower***

### PowerParamsHasSpectralDensity

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_powerSpectralDensity | composite | Yes | PowerSpectralDensity | 0..1 |
| powerparams | none | No | PowerParams | 1 |

**Table 657 – Member ends for association *PowerParamsHasSpectralDensity***

### TransceiverExplicitProfileHasOrganizationalMode

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_supportedOrganizationalMode | none | Yes | Profile | 0..1 |
| transceiverexplicitprofile | none | No | TransceiverExplicit | 1 |

**Table 658 – Member ends for association *TransceiverExplicitProfileHasOrganizationalMode***

### TransceiverExplicitProfileSupportsStdCode

Applied stereotypes:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_supportedStandardApplicationCode | none | Yes | Profile | 0..1 |
| transceiverexplicitprofile | none | No | TransceiverExplicit | 1 |

**Table 659 – Member ends for association *TransceiverExplicitProfileSupportsStdCode***

### TransceiverProfileHasExplicitProfile

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transceiverExplicitProfile | composite | Yes | TransceiverExplicit | 0..1 |
| transceiverprofile | none | No | TransceiverProfile | 1 |

**Table 660 – Member ends for association *TransceiverProfileHasExplicitProfile***

### TransceiverProfileHasOrganizationalProfile

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transceiverOrganizationalProfile | composite | Yes | TransceiverOrganizational | 0..1 |
| transceiverprofile | none | No | TransceiverProfile | 1 |

**Table 661 – Member ends for association *TransceiverProfileHasOrganizationalProfile***

### TransceiverProfileHasStandardProfile

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_transceiverStandardProfile | composite | Yes | TransceiverStandard | 0..1 |
| transceiverprofile | none | No | TransceiverProfile | 1 |

**Table 662 – Member ends for association *TransceiverProfileHasStandardProfile***

## Abstractions

### AmplificationProfileAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| AmplificationProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 663 – Member ends for class abstraction *AmplificationProfileAugmentsProfile***

### ConnectivityImpairmentProfileAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| ConnectivityImpairmentProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 664 – Member ends for class abstraction *ConnectivityImpairmentProfileAugmentsProfile***

### FiberProfileAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| FiberProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 665 – Member ends for class abstraction *FiberProfileAugmentsProfile***

### McCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| McConnectionEndPointSpec | ConnectionEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 666 – Member ends for class abstraction *McCepSpecAugmentsCep***

### McNepSpecAugmentsNep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhotonicMediaNodeEdgePointSpec | NodeEdgePoint | Augments the base NEP with MC specific information. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint" | | |

**Table 667 – Member ends for class abstraction *McNepSpecAugmentsNep***

### McgCsepSpecAugmentsCsepLpc

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| McgConnectivityServiceEndPointSpec | LayerProtocolConstraint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiConnectivity:ConnectivityServiceEndPoint:\_layerProtocolConstraint" | | |

**Table 668 – Member ends for class abstraction *McgCsepSpecAugmentsCsepLpc***

### OmsCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OmsConnectionEndPointSpec | ConnectionEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 669 – Member ends for class abstraction *OmsCepSpecAugmentsCep***

### OtsMediaCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtsMediaConnectionEndPointSpec | ConnectionEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 670 – Member ends for class abstraction *OtsMediaCepSpecAugmentsCep***

### OtsiMcCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtsiMcConnectionEndPointSpec | ConnectionEndPoint | Augments the base CEP with OTSiMC specific information. |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 671 – Member ends for class abstraction *OtsiMcCepSpecAugmentsCep***

### OtsiMcgCsepSpecAugmentsCsepLpc

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtsiMcgConnectivityServiceEndPointSpec | LayerProtocolConstraint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiConnectivity:ConnectivityServiceEndPoint:\_layerProtocolConstraint" | | |

**Table 672 – Member ends for class abstraction *OtsiMcgCsepSpecAugmentsCsepLpc***

### OtsiaCsepSpecAugmentsCsepLpc

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtsiaConnectivityServiceEndPointSpec | LayerProtocolConstraint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiConnectivity:ConnectivityServiceEndPoint:\_layerProtocolConstraint" | | |

**Table 673 – Member ends for class abstraction *OtsiaCsepSpecAugmentsCsepLpc***

### PhoMediaSipSpecAugmentsSip

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| PhotonicMediaServiceInterfacePointSpec | ServiceInterfacePoint |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_serviceInterfacePoint" | | |

**Table 674 – Member ends for class abstraction *PhoMediaSipSpecAugmentsSip***

### PhotonicAugmentsLayerProtocolQualifer

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| PhotonicLayerQualifier   * OTSiA * OMSA * OTS\_OMS * OS\_MEDIA * OCH * OTSiMCA * OMS * OTSi * MCA * OTS * OTSiMC * OTSA * OTS\_MEDIA * MC | LayerProtocolQualifier   * UNSPECIFIED |
| **Comment**  Enumeration Augment. | |

**Table 675 – Member ends for enum abstraction *PhotonicAugmentsLayerProtocolQualifer***

### TransceiverProfileAugmentsProfile

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| TransceiverProfile | Profile |  |
| target: "/TapiCommon:Context:\_context/TapiCommon:Context:\_profile" | | |

**Table 676 – Member ends for class abstraction *TransceiverProfileAugmentsProfile***

## Data Types

### CdPmdPenalty

Description:

* Entries of table; triplet chromatic dispersion, polarization mode dispersion and associated penalty.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| chromaticDispersion | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Chromatic dispersion. Measured in ps/nm (picoseconds per nanometer). | | | |
| polarizationModeDispersion | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Polarization mode dispersion. Measured in picoseconds per square root kilometer. | | | |
| penalty | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Associated penalty on the receiver. Measured in dB. | | | |

**Table 677 – Attributes for data type *CdPmdPenalty***

### FrequencyConstraint

Description:

* 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  Default value: *UNCONSTRAINED* | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Adjustment granularity in Gigahertz. As per ITU-T G.694.1, it is used to calculate nominal central frequency (in THz) | | | |
| gridType | GridType  Default value: *GRIDLESS* | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Specifies the frequency grid standard used to determine the nominal central frequency and frequency slot width | | | |

**Table 678 – Attributes for data type *FrequencyConstraint***

### FrequencyRange

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| upperFrequency | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The upper frequency bound of the frequency range specified in Hz. | | | |
| lowerFrequency | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The lower frequency bound of the frequency range specified in Hz. | | | |

**Table 679 – Attributes for data type *FrequencyRange***

### GainRange

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| minGain | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |
| maxGain | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  In dB. | | | |

**Table 680 – Attributes for data type *GainRange***

### LaserProperties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| laserStatus | LaserControlStatusType | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| laserApplicationType | LaserType | 1 | R | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The type of laser, its operational wavelengths, and its applications. String size 255. | | | |
| laserBiasCurrent | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: * support: MANDATORY |
| **Description:**  The Bias current of the laser that is the medium polarization current of the laser. | | | |
| laserTemperature | Real | 1 | R | OpenInterfaceModelAttribute   * AVC: NO   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The temperature of the laser | | | |

**Table 681 – Attributes for data type *LaserProperties***

### ModulationTechnique

Description:

* The standardModulationTechnique and proprietaryModulationTechnique attributes are mutually exclusive.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| standardModulationTechnique | StandardModulationTechnique | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| proprietaryModulationTechnique | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 682 – Attributes for data type *ModulationTechnique***

### NoiseFigureRange

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| minNoiseFigure | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| maxNoiseFigure | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 683 – Attributes for data type *NoiseFigureRange***

### PdlPenalty

Description:

* Entries of table; pair of values polarization dependent loss and associated penalty.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| maxPolarizationDependentLoss | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Maximum acceptable accumulate polarization dependent loss. Measured in dB. | | | |
| penalty | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Associated penalty on the receiver. Measured in dB. | | | |

**Table 684 – Attributes for data type *PdlPenalty***

### PowerProperties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| totalPower | Real | 1 | RW | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: * support: MANDATORY |
| **Description:**  The total power at any point in a channel specified in dBm. | | | |
| powerSpectralDensity | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: YES   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: * support: MANDATORY |
| **Description:**  This describes how power of a signal is distributed over frequency specified in nW/MHz | | | |

**Table 685 – Attributes for data type *PowerProperties***

### SpectrumBand

Description:

* This data-type holds the spectrum information in terms of upper/lower frequency and optionally the information of frequency constraints.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| upperFrequency | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The upper frequency bound of the spectrum specified in Hz. | | | |
| lowerFrequency | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 2 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The lower frequency bound of the spectrum specified in Hz. | | | |
| frequencyConstraint | FrequencyConstraint | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The combination of adjustment granularity and grid type informs about either ITU-T fixed or flexible grid capability. E.g. if grid type = DWDM then the adjustment granularity informs about the fixed slot width. E.g. if grid type = FLEX then the adjustment granularity informs about the minimum slot width (two times the adjustment granularity value). | | | |

**Table 686 – Attributes for data type *SpectrumBand***

## Enumerations

### AdjustmentGranularity

Description:

* 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:

### FecType

Contains Enumeration Literals:

* G\_FEC:
  + Generic FEC.
* E\_FEC:
  + Enhanced FEC.
* REED\_SOLOMON:
  + Reed-Solomon error correction.
* HAMMING\_CODE:
  + Hamming Code error correction.
* GOLAY:
  + Golay error correction.

### FlexiChannelSpacing

Contains Enumeration Literals:

* 6\_25GHz:

### FlexiSlotWidthGranularity

Contains Enumeration Literals:

* 12\_5GHz:

### GridType

Description:

* 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 × 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 × 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:

### LaserControlStatusType

Contains Enumeration Literals:

* ON:
* OFF:
* PULSING:
* UNDEFINED:

### LaserControlType

Contains Enumeration Literals:

* FORCED\_ON:
* FORCED\_OFF:
* AUTOMATIC\_LASER\_SHUTDOWN:
* UNDEFINED:

### LaserType

Contains Enumeration Literals:

* PUMP:
* MODULATED:
* PULSE:

### LineCoding

Description:

* ITU-T G.698.2-201811 section 7.

Contains Enumeration Literals:

* NRZ-2P5G:
  + ITU-T G.698.2-201811 section 7 table 8-1
* NRZ-OTU1:
  + ITU-T G.698.2-201811 section 7 table 8-2
* NRZ-10G:
  + ITU-T G.698.2-201811 section 7 table 8-3/8-5
* NRZ-OTU2:
  + ITU-T G.698.2-201811 section 7 table 8-4/8-6

### OpticalRoutingStrategy

Contains Enumeration Literals:

* OPTIMAL\_OSNR:
* NO\_RELAY:
* MIN\_RELAY:
* PREFERRED\_NO\_CHANGE\_WAVELENGTH\_AS\_RESTORE:
* PREFERRED\_NO\_SKIPPING\_WAVELENGTH:

### 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:
* OTS\_MEDIA:
* OS\_MEDIA:

### StandardApplicationCodeRec

Description:

* The list of ITU-T Recommendations etc. that define application code format.

Contains Enumeration Literals:

* ITUT\_G959\_1:
  + G959.1 Optical transport network physical layer interfaces Application code notation [PnWx-ytz] This Recommendation provides physical layer inter-domain interface (IrDI) specifications for optical networks that may employ wavelength division multiplexing (WDM). The IrDI may be realized as either a single-channel interface or a multichannel interface.
* ITUT\_G698\_1:
  + G698.1 Multichannel DWDM applications with single-channel optical interfaces Application code notation [DScW-ytz(v)] This Recommendation defines and provides values for single-channel optical interface parameters of physical point-to-point and ring DWDM applications (with transmission distance in the range of about 30 km to about 80 km) on single-mode optical fibres through the use of the "black link" approach.
* ITUT\_G698\_2:
  + G698.2 Amplified multichannel DWDM applications with single channel optical interfaces Application code notation [DScW-ytz(v)] This Recommendation defines and provides values for single-channel optical interface parameters of physical point-to-point and ring DWDM applications on single-mode optical fibres through the use of the 'black link' approach. The black links covered by this Recommendation may contain optical amplifiers.
* ITUT\_G696\_1:
  + G696.1 Longitudinally compatible intra-domain DWDM applications Application code notation [n.B-xWF(s)] This Recommendation provides physical layer specifications for intra-domain (IaD) DWDM optical networking applications. These specifications are provided for point-to-point, multichannel line systems with or without line amplifiers.
* ITUT\_G695:
  + G695 Optical interfaces for coarse wavelength division multiplexing applications Application code notation [CnWx-ytz] This Recommendation applies to optical interfaces for coarse wavelength division multiplexing (CWDM) optical line systems for network applications using single-mode optical fibres.

### StandardModulationTechnique

Contains Enumeration Literals:

* RZ:
* NRZ:
* BPSK:
* DPSK:
* QPSK:
* 8QAM:
* 16QAM:
* PAM4:
* PAM8:

### StandardModulationTechnique9093

Contains Enumeration Literals:

* DPSK:
  + DPSK (Differential Phase Shift Keying) modulation.
* QPSK:
  + QPSK (Quadrature Phase Shift Keying) modulation.
* DP-QPSK:
  + DP-QPSK (Dual Polarization Quadrature Phase Shift Keying) modulation.
* QAM8:
  + QAM8 (8-State Quadrature Amplitude Modulation).
* DP-QAM8:
  + DP-QAM8 (8 symbols Dual Polarization Quadrature Amplitude Modulation).
* DC-DP-QAM8:
  + DC-DP-QAM8 (8 symbols Dual Carrier Dual Polarization Quadrature Amplitude Modulation).
* QAM16:
  + QAM16 (16 symbols Quadrature Amplitude Modulation).
* DP-QAM16:
  + DP-QAM16 (16 symbols Dual Polarization Quadrature Amplitude Modulation).
* DC-DP-QAM16:
  + DC-DP-QAM16 (16 symbols Dual Carrier Dual Polarization Quadrature Amplitude Modulation).
* QAM32:
  + QAM32 (32 symbols Quadrature Amplitude Modulation).
* DP-QAM32:
  + DP-QAM32 (32 symbols Dual Polarization Quadrature Amplitude Modulation).
* QAM64:
  + QAM64 (64 symbols Quadrature Amplitude Modulation).
* DP-QAM64:
  + DP-QAM64 (64 symbols Dual Polarization Quadrature Amplitude Modulation).

### TransceiverTerminationType

Contains Enumeration Literals:

* TUNNEL\_ONLY:
  + The transponder can only be used in an Optical Tunnel termination configuration.
* UNIDIR\_3R\_ONLY:
  + The transponder can only be used in a 3R configuration, unidirectional.
* UNIDIR\_3R\_OR\_TUNNEL:
  + The transponder can be configure to be used either in an Optical Tunnel termination configuration or in a 3R configuration, unidirectional.
* BIDIR\_3R\_ONLY:
  + The transponder can only be used in a 3R configuration, bidirectional.
* BIDIR\_3R\_OR\_TUNNEL:
  + The transponder can be configure to be used either in an Optical Tunnel termination configuration or in a 3R configuration, bidirectional.

## Primitives

# Digital OTN Model

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

## Diagrams

**Figure 48 – Diagram *OtnEndPointSpec***

**Figure 49 – Diagram *OtnOamServiceSpec***

**Figure 50 – Diagram *OtnOamSpec***

**Figure 51 – Diagram *OtnPmSpec***

**Figure 52 – Diagram *OtnServiceSpec***

**Figure 53 – Diagram *OtnTypes***

## Classes

### OduCnCsepTtpPac

Description:

* 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  Default value: *1* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute specifies the number of ODUC instances of the ODUCn. | | | |

**Table 687 – Attributes for class *OduCnCsepTtpPac***

### OduCommonPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| oduRate | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |

**Table 688 – Attributes for class *OduCommonPac***

### OduConnectionEndPointSpec

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NA
* objectDeletionNotification: NA
* OpenModelClass
* support: CONDITIONAL\_MANDATORY
* condition: ODU

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduCommon | OduCommonPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTermAndAdapter | OduTerminationAndClientAdaptationPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduCtp | OduCtpPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduProtection | OduProtectionPac | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 689 – Attributes for class *OduConnectionEndPointSpec***

### OduConnectivityServiceEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduCsepCommonPac | OduCsepCommonPac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduCsepCtpPac | OduCsepCtpPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduCsepTtpPac | OduCsepTtpPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduCnCsepTtpPac | OduCnCsepTtpPac | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 690 – Attributes for class *OduConnectivityServiceEndPointSpec***

### OduCsepCommonPac

Description:

* 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** |
| oduRate | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: true * valueRange: no range constraint * support: MANDATORY |
| **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 | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute is applicable for ODU2 and ODU3 CTP only. It indicates the slot size of the ODU CTP. | | | |

**Table 691 – Attributes for class *OduCsepCommonPac***

### OduCsepCtpPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| tributaryPortNumber | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: The value range depends on the size of the Tributary Port Number (TPN) field used which depends on th 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 |
| **Description:**  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). | | | |
| tributarySlotList | Integer | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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). | | | |

**Table 692 – Attributes for class *OduCsepCtpPac***

### OduCsepTtpPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| configuredMappingType | MappingType | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the configured mapping type. | | | |
| configuredClientType | DigitalSignalType | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute configures the type of the client CTP of the server ODU TTP. | | | |

**Table 693 – Attributes for class *OduCsepTtpPac***

### OduCtpPac

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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). | | | |
| tributaryPortNumber | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: The value range depends on the size of the Tributary Port Number (TPN) field used which depends on th 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 |
| **Description:**  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). | | | |
| acceptedMSI | byte | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   Experimental  OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  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. | | | |
| \_oduMip | OduMip | 0..2 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 694 – Attributes for class *OduCtpPac***

### OduDelayPerformanceData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| delayFrameCount | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 695 – Attributes for class *OduDelayPerformanceData***

### OduMep

Description:

* 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  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_otnOamCommon | OtnOamCommon | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduMepStatus | OduMepStatus | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 696 – Attributes for class *OduMep***

### OduMepStatus

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| acti | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail. | | | |
| tcmFieldsInUse | Integer | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the used TCM fields of the ODU OH. | | | |

**Table 697 – Attributes for class *OduMepStatus***

### OduMip

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otnOamCommon | OtnOamCommon | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| codirectional | Boolean | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_oduMipStatus | OduMipStatus | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 698 – Attributes for class *OduMip***

### OduMipStatus

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| acti | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail. | | | |
| tcmFieldsInUse | Integer | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the used TCM fields of the ODU OH. | | | |
| oduCurrentNumberOfTributarySlots | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  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. | | | |

**Table 699 – Attributes for class *OduMipStatus***

### OduProtectionPac

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NA
* objectDeletionNotification: NA
* Preliminary
* OpenModelClass
* support: MANDATORY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| apsEnable | Boolean  Default value: *true* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| apsLevel | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute is for configuring the automatic protection switching (APS) level that should operate at the transport adaptation function that is represented by the ODU\_ConnectionTerminationPoint object class. It triggers the MI\_APS\_LVL signal to the transport adaptation function. The value 0 means path and the values 1 through 6 mean TCM level 1 through 6 respectively. | | | |

**Table 700 – Attributes for class *OduProtectionPac***

### OduTcmMeg

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| tcmLevel | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 701 – Attributes for class *OduTcmMeg***

### OduTcmMep

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| codirectional | Boolean | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute specifies the directionality of the ODUT MEP with respect to the associated ODU CEP. The value of TRUE means that the sink part of the ODUT MEP terminates 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. | | | |
| tcmLevel | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| positionSequence | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| tcmExtension | TcmExtension  Default value: *NORMAL* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  ITU-T G.798: TCM information forwarding and erasing: TCM information can be forwarded or erased for continuing TCM information into sections at the end of a TCM section and the related ODUT\_TT\_Sk function. | | | |
| tcmMode | TcmMode | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute specifies the TCM mode at the entity. Valid values are: Operational, Monitor, and Transparent. | | | |
| txti | String  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| adminStateSource | AdministrativeState | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_otnOamCommon | OtnOamCommon | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMepStatus | OduTcmMepStatus | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 702 – Attributes for class *OduTcmMep***

### OduTcmMepStatus

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| tcmField | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the tandem connection monitoring field of the ODU OH. | | | |
| acStatusSource | TcmStatus | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the status of the accepted TCM. | | | |
| acStatusSink | TcmStatus | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the status of the accepted TCM. | | | |
| operationalState | OperationalState | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| acti | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail. | | | |

**Table 703 – Attributes for class *OduTcmMepStatus***

### OduTcmMip

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| codirectional | Boolean | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| tcmLevel | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| positionSequence | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otnOamCommon | OtnOamCommon | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMipStatus | OduTcmMipStatus | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 704 – Attributes for class *OduTcmMip***

### OduTcmMipStatus

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| tcmField | Integer | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the tandem connection monitoring field of the ODU OH. | | | |
| operationalState | OperationalState | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| acti | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail. | | | |

**Table 705 – Attributes for class *OduTcmMipStatus***

### OduTcmOamService

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| tcmLevel | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 706 – Attributes for class *OduTcmOamService***

### OduTerminationAndClientAdaptationPac

Description:

* 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
* OpenModelClass
* support: MANDATORY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| opuTributarySlotSize | OduSlotSize | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute is only applicable for ODU2 and ODU3 TTP which multiplex ODU0/1 containers. It indicates the slot size of the ODU CTP. | | | |
| autoPayloadType | Boolean | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| configuredClientType | DigitalSignalType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute configures the type of the client CTP of the server ODU TTP. | | | |
| configuredMappingType | MappingType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the configured mapping type. | | | |
| acceptedPayloadType | OduPayloadType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 15-9 of ITU-T Recommendation G.709 with one additional value UNINTERPRETABLE. | | | |
| numberOfOduC | Integer  Default value: *1* | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| oduCnEffectiveTimeSlotList | Integer | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 sqaure bracket represents the whole integer. | | | |
| \_oduMep | OduMep | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 707 – Attributes for class *OduTerminationAndClientAdaptationPac***

### OtnCnErrorPerformanceData

Description:

* 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** |
| nearEndOtnCounters | OtnCounters | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| farEndOtnCounters | OtnCounters | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| bidirectionalUas | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| otnCnOhIndex | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |

**Table 708 – Attributes for class *OtnCnErrorPerformanceData***

### OtnErrorPerformanceData

Description:

* ODU/OTU PM Metrics.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| nearEndOtnCounters | OtnCounters | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| farEndOtnCounters | OtnCounters | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| bidirectionalUas | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| codirectional | Boolean | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute specifies the directionality of the ODU MIP with respect to the monitored ODU CEP. The value of TRUE means that the MIP receives the same signal direction as the sink part of the ODU CEP. The Source part behaves similarly. This attribute applies only in case of embedded provisioning, i.e. the MIPs are data structures of ODU CEP. | | | |
| \_otnCnErrorPerformanceData | OtnCnErrorPerformanceData | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 709 – Attributes for class *OtnErrorPerformanceData***

### OtnMegSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduTcmMeg | OduTcmMeg | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 710 – Attributes for class *OtnMegSpec***

### OtnMepSpec

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NA
* objectDeletionNotification: NA
* OpenModelClass
* support: CONDITIONAL\_MANDATORY
* condition: ODU

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduMep | OduMep | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otuMep | OtuMep | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMep | OduTcmMep | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 711 – Attributes for class *OtnMepSpec***

### OtnMipSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduMip | OduMip | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMip | OduTcmMip | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 712 – Attributes for class *OtnMipSpec***

### OtnOamCommon

Description:

* 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  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  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. | | | |
| exSapi | String  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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  Default value: *OFF* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  This attribute indicates the mode of the Trace Identifier Mismatch (TIM) Detection function allowed values: OFF, SAPIonly, DAPIonly, SAPIandDAPI | | | |
| timActDisabled | Boolean  Default value: *true* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |

**Table 713 – Attributes for class *OtnOamCommon***

### OtnOamMepServicePoint

Description:

* 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 OtnOamService/ServicePoints. 2) Oam provisioning through OtnOamService/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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMep | OduTcmMep | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otuMep | OtuMep | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 714 – Attributes for class *OtnOamMepServicePoint***

### OtnOamMipServicePoint

Description:

* See OtnOamMepService point comment.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduMip | OduMip | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_oduTcmMip | OduTcmMip | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 715 – Attributes for class *OtnOamMipServicePoint***

### OtnOamService

Description:

* OduOamService class is used for TCM provisioning.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_oduTcmOamService | OduTcmOamService | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 716 – Attributes for class *OtnOamService***

### OtsiaMep

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| totalPowerWarnThresholdUpper | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Allows to configure the upper power threshold on whole Assembly scope. | | | |
| totalPowerWarnThresholdLower | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Allows to configure the lower power threshold on whole Assembly scope. | | | |

**Table 717 – Attributes for class *OtsiaMep***

### OtuConnectionEndPointSpec

Description:

* 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 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 718 – Attributes for class *OtuConnectionEndPointSpec***

### OtuConnectivityServiceEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otuCsepTtpPac | OtuCsepTtpPac | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 719 – Attributes for class *OtuConnectivityServiceEndPointSpec***

### OtuCsepTtpPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| fecType | FecType | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| baudRate | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | | | |

**Table 720 – Attributes for class *OtuCsepTtpPac***

### OtuFecPerformanceData

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  counter: bit error rate before correction by FEC | | | |
| postFecBer | Real | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  counter: bit error rate after correction by FEC | | | |
| uncorrectableBytes | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Bytes that could not be corrected by FEC | | | |
| uncorrectableBits | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Bits that could not be corrected by FEC | | | |
| correctedBytes | Integer | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Bytes corrected between those that were received corrupted | | | |

**Table 721 – Attributes for class *OtuFecPerformanceData***

### OtuMep

Description:

* 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  Default value: *0* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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. | | | |
| \_otnOamCommon | OtnOamCommon | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otuMepStatus | OtuMepStatus | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| fecMonitoring | Boolean  Default value: *true* | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| fecCorrectedErrorThreshold | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| \_otsiaMep | OtsiaMep | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 722 – Attributes for class *OtuMep***

### OtuMepStatus

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| acti | String | 1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  The Trail Trace Identifier (TTI) information recovered (Accepted) from the TTI overhead position at the sink of a trail. | | | |

**Table 723 – Attributes for class *OtuMepStatus***

### OtuTtpPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_otuMep | OtuMep | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| fecType | FecType | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| baudRate | Integer | 0..1 | R | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **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 | | | |

**Table 724 – Attributes for class *OtuTtpPac***

## Signals

## Associations

### OduCepHasProtectionPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduProtection | composite | Yes | OduProtectionPac | 0..1 |
| oduconnectionendpointspec | none | No | OduConnectionEndPointSpec | 1 |

**Table 725 – Member ends for association *OduCepHasProtectionPac***

### OduCepSpecHasCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCommon | composite | Yes | OduCommonPac | 0..1 |
| oduconnectionendpointspec | none | No | OduConnectionEndPointSpec | 1 |

**Table 726 – Member ends for association *OduCepSpecHasCommonPac***

### OduCepSpecHasCtpPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCtp | composite | Yes | OduCtpPac | 0..1 |
| \_lpSpec | none | No | OduConnectionEndPointSpec | 1 |

**Table 727 – Member ends for association *OduCepSpecHasCtpPac***

### OduCepSpecHasTermAdapterPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTermAndAdapter | composite | Yes | OduTerminationAndClientAdaptationPac | 0..1 |
| \_lpSpec | none | No | OduConnectionEndPointSpec | 1 |

**Table 728 – Member ends for association *OduCepSpecHasTermAdapterPac***

### OduCsepSpecHasCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCsepCommonPac | composite | Yes | OduCsepCommonPac | 1 |
| oduconnectivityserviceendpointspec | none | No | OduConnectivityServiceEndPointSpec | 1 |

**Table 729 – Member ends for association *OduCsepSpecHasCommonPac***

### OduCsepSpecHasCtpPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCsepCtpPac | composite | Yes | OduCsepCtpPac | 0..1 |
| oduconnectivityserviceendpointspec | none | No | OduConnectivityServiceEndPointSpec | 1 |

**Table 730 – Member ends for association *OduCsepSpecHasCtpPac***

### OduCsepSpecHasOduCnPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCnCsepTtpPac | composite | Yes | OduCnCsepTtpPac | 0..1 |
| oduconnectivityserviceendpointspec | none | No | OduConnectivityServiceEndPointSpec | 1 |

**Table 731 – Member ends for association *OduCsepSpecHasOduCnPac***

### OduCsepSpecHasTermAdapterPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduCsepTtpPac | composite | Yes | OduCsepTtpPac | 0..1 |
| oduconnectivityserviceendpointspec | none | No | OduConnectivityServiceEndPointSpec | 1 |

**Table 732 – Member ends for association *OduCsepSpecHasTermAdapterPac***

### OduCtpCepHasOduMip

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMip | composite | Yes | OduMip | 0..2 |
| oductppac | none | No | OduCtpPac | 1 |

**Table 733 – Member ends for association *OduCtpCepHasOduMip***

### OduMepHasOtnOamCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnOamCommon | composite | Yes | OtnOamCommon | 0..1 |
| odumep | none | No | OduMep | 1 |

**Table 734 – Member ends for association *OduMepHasOtnOamCommon***

### OduMepHasStatus

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMepStatus | composite | Yes | OduMepStatus | 0..1 |
| odumep | none | No | OduMep | 1 |

**Table 735 – Member ends for association *OduMepHasStatus***

### OduMepSpecHasOduMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMep | composite | Yes | OduMep | 0..1 |
| odumepspec | none | No | OtnMepSpec | 1 |

**Table 736 – Member ends for association *OduMepSpecHasOduMep***

### OduMepSpecHasOduTcmPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMep | composite | Yes | OduTcmMep | 0..1 |
| odumepspec | none | No | OtnMepSpec | 1 |

**Table 737 – Member ends for association *OduMepSpecHasOduTcmPac***

### OduMepSpecHasOtuMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuMep | composite | Yes | OtuMep | 0..1 |
| odumepspec | none | No | OtnMepSpec | 1 |

**Table 738 – Member ends for association *OduMepSpecHasOtuMep***

### OduMipHasOtnOamCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnOamCommon | none | Yes | OtnOamCommon | 0..1 |
| odumip | none | No | OduMip | 1 |

**Table 739 – Member ends for association *OduMipHasOtnOamCommon***

### OduMipHasStatus

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMipStatus | composite | Yes | OduMipStatus | 0..1 |
| odumip | none | No | OduMip | 1 |

**Table 740 – Member ends for association *OduMipHasStatus***

### OduMipSpecHasOduMip

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMip | composite | Yes | OduMip | 0..1 |
| odumipspec | none | No | OtnMipSpec | 1 |

**Table 741 – Member ends for association *OduMipSpecHasOduMip***

### OduMipSpecHasOduTcmMip

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMip | composite | Yes | OduTcmMip | 0..1 |
| odumipspec | none | No | OtnMipSpec | 1 |

**Table 742 – Member ends for association *OduMipSpecHasOduTcmMip***

### OduOamServiceHasTcm

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmOamService | composite | Yes | OduTcmOamService | 0..1 |
| oduoamservice | none | No | OtnOamService | 1 |

**Table 743 – Member ends for association *OduOamServiceHasTcm***

### OduTcmMepHasOtnOamCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnOamCommon | composite | Yes | OtnOamCommon | 0..1 |
| odutcmmep | none | No | OduTcmMep | 1 |

**Table 744 – Member ends for association *OduTcmMepHasOtnOamCommon***

### OduTcmMepHasStatus

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMepStatus | composite | Yes | OduTcmMepStatus | 0..1 |
| odutcmmep | none | No | OduTcmMep | 1 |

**Table 745 – Member ends for association *OduTcmMepHasStatus***

### OduTcmMipHasOtnOamCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnOamCommon | composite | Yes | OtnOamCommon | 0..1 |
| odutcmmip | none | No | OduTcmMip | 1 |

**Table 746 – Member ends for association *OduTcmMipHasOtnOamCommon***

### OduTcmMipHasStatus

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMipStatus | composite | Yes | OduTcmMipStatus | 0..1 |
| odutcmmip | none | No | OduTcmMip | 1 |

**Table 747 – Member ends for association *OduTcmMipHasStatus***

### OduTtpCepHasOduMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMep | composite | Yes | OduMep | 0..1 |
| oduconnectionendpointspec | none | No | OduTerminationAndClientAdaptationPac | 1 |

**Table 748 – Member ends for association *OduTtpCepHasOduMep***

### OtnErrorPmHasOducnErrorPm

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnCnErrorPerformanceData | none | Yes | OtnCnErrorPerformanceData | 0..\* |
| oduerrorperformancedata | none | No | OtnErrorPerformanceData | 1 |

**Table 749 – Member ends for association *OtnErrorPmHasOducnErrorPm***

### OtnMegSpecHasOduTcm

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMeg | composite | Yes | OduTcmMeg | 0..1 |
| otnmegspec | none | No | OtnMegSpec | 1 |

**Table 750 – Member ends for association *OtnMegSpecHasOduTcm***

### OtnOamMepServicePointHasOduMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMep | composite | Yes | OduMep | 0..1 |
| oduoammepservicepoint | none | No | OtnOamMepServicePoint | 1 |

**Table 751 – Member ends for association *OtnOamMepServicePointHasOduMep***

### OtnOamMepServicePointHasOduTcmMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMep | composite | Yes | OduTcmMep | 0..1 |
| oduoammepservicepoint | none | No | OtnOamMepServicePoint | 1 |

**Table 752 – Member ends for association *OtnOamMepServicePointHasOduTcmMep***

### OtnOamMepServicePointHasOtuMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuMep | composite | Yes | OtuMep | 0..1 |
| oduoammepservicepoint | none | No | OtnOamMepServicePoint | 1 |

**Table 753 – Member ends for association *OtnOamMepServicePointHasOtuMep***

### OtnOamMipServicePointHasOduMip

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduMip | composite | Yes | OduMip | 0..1 |
| oduoammipservicepoint | none | No | OtnOamMipServicePoint | 1 |

**Table 754 – Member ends for association *OtnOamMipServicePointHasOduMip***

### OtnOamMipServicePointHasOduTcmMip

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_oduTcmMip | composite | Yes | OduTcmMip | 0..1 |
| oduoammipservicepoint | none | No | OtnOamMipServicePoint | 1 |

**Table 755 – Member ends for association *OtnOamMipServicePointHasOduTcmMip***

### OtuCepSpecHasOtuTtpPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuTtpPac | composite | Yes | OtuTtpPac | 1 |
| otuconnectionendpointspec | none | No | OtuConnectionEndPointSpec | 1 |

**Table 756 – Member ends for association *OtuCepSpecHasOtuTtpPac***

### OtuCsepSpecHasOtuTtpPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuCsepTtpPac | composite | Yes | OtuCsepTtpPac | 1 |
| otuconnectivityserviceendpointspec | none | No | OtuConnectivityServiceEndPointSpec | 1 |

**Table 757 – Member ends for association *OtuCsepSpecHasOtuTtpPac***

### OtuMepHasOtnOamCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otnOamCommon | composite | Yes | OtnOamCommon | 0..1 |
| otumep | none | No | OtuMep | 1 |

**Table 758 – Member ends for association *OtuMepHasOtnOamCommon***

### OtuMepHasOtsiaMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otsiaMep | composite | Yes | OtsiaMep | 0..1 |
| otumep | none | No | OtuMep | 1 |

**Table 759 – Member ends for association *OtuMepHasOtsiaMep***

### OtuMepHasStatus

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuMepStatus | composite | Yes | OtuMepStatus | 0..1 |
| otumep | none | No | OtuMep | 1 |

**Table 760 – Member ends for association *OtuMepHasStatus***

### OtuTtpCepHasOtuMep

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_otuMep | composite | Yes | OtuMep | 0..1 |
| otuttppac | none | No | OtuTtpPac | 1 |

**Table 761 – Member ends for association *OtuTtpCepHasOtuMep***

## Abstractions

### OduCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OduConnectionEndPointSpec | ConnectionEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 762 – Member ends for class abstraction *OduCepSpecAugmentsCep***

### OduCsepSpecAugmentsCsepLpc

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OduConnectivityServiceEndPointSpec | LayerProtocolConstraint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiConnectivity:ConnectivityServiceEndPoint:\_layerProtocolConstraint" | | |

**Table 763 – Member ends for class abstraction *OduCsepSpecAugmentsCsepLpc***

### OduDelayPerformanceDataAugmentsCd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OduDelayPerformanceData | CurrentData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData" | | |

**Table 764 – Member ends for class abstraction *OduDelayPerformanceDataAugmentsCd***

### OduDelayPerformanceDataAugmentsHd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OduDelayPerformanceData | HistoryData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData/TapiOam:CurrentData:\_historyData" | | |

**Table 765 – Member ends for class abstraction *OduDelayPerformanceDataAugmentsHd***

### OduFecPmDataAugmentsCd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtuFecPerformanceData | CurrentData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData" | | |

**Table 766 – Member ends for class abstraction *OduFecPmDataAugmentsCd***

### OduFecPmDataAugmentsHd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtuFecPerformanceData | HistoryData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData/TapiOam:CurrentData:\_historyData" | | |

**Table 767 – Member ends for class abstraction *OduFecPmDataAugmentsHd***

### OduOamJobTypeAugmentsOamJobType

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OduOamJobType   * TCM * NCM | OamJobType   * LOOPBACK\_TERMINAL * LOOPBACK\_FACILITY |
| **Comment**  Enumeration Augment. | |

**Table 768 – Member ends for enum abstraction *OduOamJobTypeAugmentsOamJobType***

### OduOamMepServicePointAugmentsOamServicePoint

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnOamMepServicePoint | OamServicePoint |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamService/TapiOam:OamService:\_oamServicePoint" | | |

**Table 769 – Member ends for class abstraction *OduOamMepServicePointAugmentsOamServicePoint***

### OduOamMepSrvPointAugmentsConnOamSrvPoint

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnOamMepServicePoint | ConnectivityOamServicePoint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiOam:ConnectivityOamServicePoint" | | |

**Table 770 – Member ends for class abstraction *OduOamMepSrvPointAugmentsConnOamSrvPoint***

### OduOamMipServicePointAugmentsOamServicePoint

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnOamMipServicePoint | OamServicePoint |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamService/TapiOam:OamService:\_oamServicePoint" | | |

**Table 771 – Member ends for class abstraction *OduOamMipServicePointAugmentsOamServicePoint***

### OduOamMipSrvPointAugmentsConnOamSrvPoint

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnOamMipServicePoint | ConnectivityOamServicePoint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiOam:ConnectivityOamServicePoint" | | |

**Table 772 – Member ends for class abstraction *OduOamMipSrvPointAugmentsConnOamSrvPoint***

### OduTcmMegAugmentsMeg

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnMegSpec | Meg |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_meg" | | |

**Table 773 – Member ends for class abstraction *OduTcmMegAugmentsMeg***

### OduTypeAugmentsLayerProtocolQualifier

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OduType   * ODU\_CN * ODU2 * ODU\_FLEX * ODU2E * ODU3 * ODU4 * ODU0 * ODU1 | LayerProtocolQualifier   * UNSPECIFIED |
| **Comment**  Enumeration Augment. | |

**Table 774 – Member ends for enum abstraction *OduTypeAugmentsLayerProtocolQualifier***

### OtnErrorPmDataAugmentsCd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnErrorPerformanceData | CurrentData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData" | | |

**Table 775 – Member ends for class abstraction *OtnErrorPmDataAugmentsCd***

### OtnErrorPmDataAugmentsHd

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnErrorPerformanceData | HistoryData |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamJob/TapiOam:OamJob:\_currentData/TapiOam:CurrentData:\_historyData" | | |

**Table 776 – Member ends for class abstraction *OtnErrorPmDataAugmentsHd***

### OtnFaultConditionDeterminationAugmentsFaultConditionDetermination

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OtnFaultConditionDetermination   * NON\_INTRUSIVE\_SUBLAYER * NON\_INTRUSIVE\_CLIENT * NON\_INTRUSIVE\_E2E | FaultConditionDetermination   * TEST * SUBLAYER * INHERENT * NON\_INTRUSIVE |
| **Comment**  Enumeration Augment. | |

**Table 777 – Member ends for enum abstraction *OtnFaultConditionDeterminationAugmentsFaultConditionDetermination***

### OtnMepSpecAugmentsMep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnMepSpec | Mep |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_meg/TapiOam:Meg:\_mep" | | |

**Table 778 – Member ends for class abstraction *OtnMepSpecAugmentsMep***

### OtnMipSpecAugmentsMip

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnMipSpec | Mip |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_meg/TapiOam:Meg:\_mip" | | |

**Table 779 – Member ends for class abstraction *OtnMipSpecAugmentsMip***

### OtnOamServiceAugmentsOamService

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtnOamService | OamService |  |
| target: "/TapiCommon:Context:\_context/TapiOam:OamContext:\_oamContext/TapiOam:OamContext:\_oamService" | | |

**Table 780 – Member ends for class abstraction *OtnOamServiceAugmentsOamService***

### OtuCepSpecAugmentsCep

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtuConnectionEndPointSpec | ConnectionEndPoint |  |
| target: "/TapiCommon:Context:\_context/TapiTopology:TopologyContext:\_topologyContext/TapiTopology:TopologyContext:\_topology/TapiTopology:Topology:\_node/TapiTopology:Node:\_ownedNodeEdgePoint/TapiConnectivity:CepList:\_cepList/TapiConnectivity:CepList:\_connectionEndPoint" | | |

**Table 781 – Member ends for class abstraction *OtuCepSpecAugmentsCep***

### OtuCsepSpecAugmentsCsepLpc

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| OtuConnectivityServiceEndPointSpec | LayerProtocolConstraint |  |
| target: "/TapiCommon:Context:\_context/TapiConnectivity:ConnectivityContext:\_connectivityContext/TapiConnectivity:ConnectivityContext:\_connectivityService/TapiConnectivity:ConnectivityService:\_endPoint/TapiConnectivity:ConnectivityServiceEndPoint:\_layerProtocolConstraint" | | |

**Table 782 – Member ends for class abstraction *OtuCsepSpecAugmentsCsepLpc***

### OtuTypeAugmentsLayerProtocolQualifier

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| OtuType   * OTU2 * OTU\_CN * OTU4 * OTU1 * OTU3 | LayerProtocolQualifier   * UNSPECIFIED |
| **Comment**  Enumeration Augment. | |

**Table 783 – Member ends for enum abstraction *OtuTypeAugmentsLayerProtocolQualifier***

## Data Types

### DegThr

Description:

* Degraded Threshold, specify either the percentage or the number of Errored 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 Errored Blocks is captured in an integer value.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| degThrValue | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Percentage of detected errored blocks | | | |
| degThrType | DegThrType  Default value: *NUMBER\_ERRORED\_BLOCKS* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:**  Number of errored blocks | | | |
| percentageGranularity | PercentageGranularity  Default value: *ONES* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 784 – Attributes for data type *DegThr***

### FecType

Description:

* 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 | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| proprietaryFecType | String | 0..1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 785 – Attributes for data type *FecType***

### OduPayloadType

Description:

* This type includes is a 2-digit Hex code that indicates the new accepted payload type. Valid values are defined in Table 15-9 of ITU-T Recommendation G.709 with one additional value UNINTERPRETABLE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| namedPayloadType | OduNamedPayloadType  Default value: *UNKNOWN* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| hexPayloadType | String  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 786 – Attributes for data type *OduPayloadType***

### OtnCounters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| bbe | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| ses | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| uas | Integer | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 787 – Attributes for data type *OtnCounters***

### UasChoice

Description:

* 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  Default value: *true* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| uas | Integer  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| nuas | Integer  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |
| fuas | Integer  Default value: *0* | 1 | RW | OpenInterfaceModelAttribute   * AVC: NA   OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY |
| **Description:** | | | |

**Table 788 – Attributes for data type *UasChoice***

## Enumerations

### DegThrType

Description:

* 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

### MappingType

Contains Enumeration Literals:

* AMP:
* BMP:
* GFP\_F:
* GMP:
* TTP\_GFP\_BMP:
* NULL:

### OduNamedPayloadType

Contains Enumeration Literals:

* UNKNOWN:
* UNINTERPRETABLE:

### OduOamJobType

Contains Enumeration Literals:

* NCM:
* TCM:

### OduSlotSize

Contains Enumeration Literals:

* 1G25:
* 2G5:

### OduType

Contains Enumeration Literals:

* ODU0:
* ODU1:
* ODU2:
* ODU2E:
* ODU3:
* ODU4:
* ODU\_FLEX:
* ODU\_CN:

### 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.

### OtnFaultConditionDetermination

Description:

* 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

### OtuType

Contains Enumeration Literals:

* OTU1:
* OTU2:
* OTU3:
* OTU4:
* OTU\_CN:

### PercentageGranularity

Contains Enumeration Literals:

* ONES:
* ONE\_TENTHS:
  + value \* (1/10)
* ONE\_HUNDREDTHS:
  + value \* (1/100)
* ONE\_THOUSANDTHS:
  + value \* (1/1000)

### StandardFecType

Contains Enumeration Literals:

* REED\_SOLOMON:

### TcmExtension

Contains Enumeration Literals:

* NORMAL:
* PASS\_THROUGH:
* ERASE:

### TcmMode

Description:

* List of value modes for the sink side of the tandem connection monitoring function.

Contains Enumeration Literals:

* OPERATIONAL:
* TRANSPARENT:
* MONITOR:

### TcmMonitoring

Description:

* Monitoring types for the tandem connection monitoring function.

Contains Enumeration Literals:

* INTRUSIVE:
* NON\_INTRUSIVE:

### TcmStatus

Description:

* 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

### TimDetMo

Description:

* List of modes for trace identifier mismatch detection.

Contains Enumeration Literals:

* DAPI:
* SAPI:
* BOTH:
* OFF:

## Primitives

# 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

## Diagrams

**Figure 54 – Diagram *EthSpecConnectivity***

**Figure 55 – Diagram *EthSpecJobsFm***

**Figure 56 – Diagram *EthSpecJobsPmOnDemand***

**Figure 57 – Diagram *EthSpecJobsPmProActive***

**Figure 58 – Diagram *EthSpecOamResource***

**Figure 59 – Diagram *EthSpecOamService***

**Figure 60 – Diagram *EthernetTypes***

## Classes

### EthCfmLinkTracePac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| period | OamPeriod | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 789 – Attributes for class *EthCfmLinkTracePac***

### EthCfmLinkTraceResultData

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| seqNumber | Integer | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| receiveOrder | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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 | OpenModelAttribute   * 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 | OpenModelAttribute   * 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 | OpenModelAttribute   * 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 | OpenModelAttribute   * 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 | OpenModelAttribute   * 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. | | | |
| relayActionField | LinkTraceRelayActionFieldValue | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: OPTIONAL   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| egressPortId | LldpPortIdSubtype | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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 'chsssis 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. | | | |

**Table 790 – Attributes for class *EthCfmLinkTraceResultData***

### EthCfmMaintenanceAssociation

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| maintenanceAssociationName | MaintenanceAssociationName | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  IEEE P802.1Qcx/D0.3: MEF 38: The Maintenance Association name and name format choice. | | | |
| idPermission | AssociationIdPermissionTypes | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 791 – Attributes for class *EthCfmMaintenanceAssociation***

### EthCfmMaintenanceDomain

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| maintenanceDomainNameType | MaintenanceDomainNameType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  IEEE P802.1Qcx/D0.3: MEF 38: The Maintenance Domain name format choice. | | | |
| maintenanceDomainName | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  IEEE P802.1Qcx/D0.3: MEF 38: A reference to the maintenance domain that this maintenance group is associated with. | | | |

**Table 792 – Attributes for class *EthCfmMaintenanceDomain***

### EthConnectionEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_etyTerm | EtyTerminationPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethTerm | EthTerminationPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethCtp | EthCtpPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 793 – Attributes for class *EthConnectionEndPointSpec***

### EthConnectivityService

Applied stereotypes:

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

### EthConnectivityServiceEndPointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_etyTerminationCommonPac | EtyTerminationCommonPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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:** | | | |

**Table 794 – Attributes for class *EthConnectivityServiceEndPointSpec***

### EthCtpCommonPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| auxiliaryFunctionPositionSequence | Integer  Default value: | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |
| collectorMaxDelay | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  See 802.1AX: The value of this attribute defines the maximum delay, in tens of microseconds, that may be imposed by the Frame Collector between receiving a frame from an Aggregator Parser, and either delivering the frame to its MAC Client or discarding the frame (see IEEE 802.1AX clause 5.2.3.1.1). | | | |
| csfConfig | CsfConfig | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *See data type* | 1 | RW | OpenModelAttribute   * 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   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *2000* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_trafficConditioningPac | TrafficConditioningPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 795 – Attributes for class *EthCtpCommonPac***

### EthCtpPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| actorOperKey | Integer  Default value: *NA* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  See 802.1AX: A MAC address used as a unique identifier for the System that contains this Aggregator. | | | |
| actorSystemPriority | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  See 802.1AX: Indicating the priority associated with the Actors System ID. | | | |
| dataRate | Integer  Default value: *NA* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| \_ethCtpCommonPac | EthCtpCommonPac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 796 – Attributes for class *EthCtpPac***

### EthLinkTraceJob

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| priority | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 797 – Attributes for class *EthLinkTraceJob***

### EthLinkTraceResultData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| resultList | LinkTraceResult | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 798 – Attributes for class *EthLinkTraceResultData***

### EthLoopbackJob

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethOamTestLoopbackCommonPac | EthOamTestLoopbackCommonPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| number | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 799 – Attributes for class *EthLoopbackJob***

### EthLoopbackResultData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| recLbrFrames | Integer | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  G.8052: This parameter returns the number of LBR traffic unites (messages) that were received out of order (OO). | | | |
| sentLbmFrames | Integer | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  G.8052: This parameter returns the total number of sent LBM frames. | | | |
| crcLbrFrames | Integer | 1 | R | OpenModelAttribute   * 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   * 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   * 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. | | | |

**Table 800 – Attributes for class *EthLoopbackResultData***

### EthMeasurementJobControlCommon

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| priority | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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   * 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. | | | |
| messagePeriod | Integer  Default value: *1000* | 1 | RW | OpenModelAttribute   * 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  Default value: *0* | 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 (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  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Default value: *true* | 1 | RW | OpenModelAttribute   * 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   * 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  Default value: *1* | 0..1 | RW | OpenModelAttribute   * 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/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s. | | | |
| flrAvailabilityThreshold | Real  Default value: *0.1* | 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  Default value: *10* | 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. | | | |

**Table 801 – Attributes for class *EthMeasurementJobControlCommon***

### EthMegCommon

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| megLevel | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| clientMel | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| megIdentifier | String | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Optional in case 802.1Q maintenanceAssociationName is used. | | | |
| isCcEnabled | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *1S* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 802 – Attributes for class *EthMegCommon***

### EthMegSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethCfmMaintenanceDomain | EthCfmMaintenanceDomain | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethCfmMaintenanceAssociation | EthCfmMaintenanceAssociation | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMegCommon | EthMegCommon | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 803 – Attributes for class *EthMegSpec***

### EthMepCommon

Description:

* Basic attributes: adminState, clientMel, megIdentifier, mepMac

Description:

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

Description:

* Continuity Check Process related attributes: ccPeriod, ccPriority, isCcEnabled

Description:

* Lock Process related attributes: lckPeriod, lckPriority

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| ccPriority | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |
| lckPeriod | OamPeriod  Default value: *1S* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *7* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *true* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 804 – Attributes for class *EthMepCommon***

### EthMepSink

Description:

* Basic attribute: peerMepRefList

Description:

* Defect correlation Process related attribute: currentProblemList

Description:

* 1DM related attribute: 1DmPriority

Description:

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

Description:

* CSF Process related attributes: isCsfRdiFdiEnabled, isCsfReported

Description:

* AIS Process related attributes: aisPeriod, aisPriority

Description:

* Bandwidth notification Process related attribute: bandwidthReport

Description:

* 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.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| aisPriority | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *1S* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *true* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *true* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute models the content of the bandwidth report received by the MEP Sink from the peer MEP Source. | | | |
| lmDegm | Integer  Default value: *10* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Default value: *30* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *10* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  IEEE P802.1Qcx/D0.3: MEF 38: The total number of unexpected LTRs received. | | | |

**Table 805 – Attributes for class *EthMepSink***

### EthMepSource

Description:

* Link trace related operation: linkTrace

Description:

* CSF Process related attributes: csfConfig, csfPeriod, csfPriority

Description:

* Loopback related operations: loopbackDiscover, loopbackSeries, loopbackTest, loopbackTestTerminate

Description:

* On demand measurement job control related operation: establishOnDemandDualEndedMeasurementJobSource

Description:

* Proactive measurement job control related operation: establishProActiveDualEndedMeasurementJobSource

Description:

* Test related operations: testInitiatorStart, testInitiatorTerminate

Description:

* 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.

Description:

* Basic attribute: mepIdentifier

Description:

* APS Process related attribute: apsPriority

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| apsPriority | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *7* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *1S* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *ENABLED\_WITH\_RDI\_FDI\_DCI* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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. | | | |

**Table 806 – Attributes for class *EthMepSource***

### EthMepSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethMepCommon | EthMepCommon | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMepSource | EthMepSource | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMepSink | EthMepSink | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| mepMac | MacAddress | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the MAC Address of the MEP. | | | |

**Table 807 – Attributes for class *EthMepSpec***

### EthMipCommon

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| isFullMip | Boolean | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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 | | | |

**Table 808 – Attributes for class *EthMipCommon***

### EthMipSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| mipMac | MacAddress | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the MAC address of the MIP instance. | | | |
| \_ethMipCommon | EthMipCommon | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 809 – Attributes for class *EthMipSpec***

### EthOamMepServicePoint

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethMepSink | EthMepSink | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMepSource | EthMepSource | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMepCommon | EthMepCommon | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 810 – Attributes for class *EthOamMepServicePoint***

### EthOamMipServicePoint

Description:

* This class defines the common parameters for configuration of MIP.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethMipCommon | EthMipCommon | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 811 – Attributes for class *EthOamMipServicePoint***

### EthOamService

Description:

* This class defines the parameters for configuration of MEG.

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethCfmMaintenanceDomain | EthCfmMaintenanceDomain | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethCfmMaintenanceAssociation | EthCfmMaintenanceAssociation | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethMegCommon | EthMegCommon | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 812 – Attributes for class *EthOamService***

### EthOamTestLoopbackCommonPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| period | OamPeriod | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 813 – Attributes for class *EthOamTestLoopbackCommonPac***

### EthOnDemand1DmPerformanceData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalNearEnd1DmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| samplesNearEnd1DmParameters | SamplesDmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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. | | | |

**Table 814 – Attributes for class *EthOnDemand1DmPerformanceData***

### EthOnDemand1DmSourcePerformanceData

Applied stereotypes:

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

### EthOnDemand1LmPerformanceData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalNearEnd1LmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| totalCountersNearEnd1LmParameters | TotalCountersLmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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. | | | |

**Table 815 – Attributes for class *EthOnDemand1LmPerformanceData***

### EthOnDemand1LmSourcePerformanceData

Applied stereotypes:

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

### EthOnDemandDmPerformanceData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalBiDirDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical bidirectional performnace parameters. | | | |
| statisticalNearEndDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| statisticalFarEndDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical far end performnace parameters. | | | |
| samplesNearEndDmParameters | SamplesDmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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   * 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. | | | |

**Table 816 – Attributes for class *EthOnDemandDmPerformanceData***

### EthOnDemandDualEndedMeasurementJob

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethOnDemandMeasurementJobControlSource | EthOnDemandMeasurementJobControlSource | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethOnDemandMeasurementJobControlSink | EthOnDemandMeasurementJobControlSink | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 817 – Attributes for class *EthOnDemandDualEndedMeasurementJob***

### EthOnDemandLmPerformanceData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalNearEndLmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| statisticalFarEndLmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical far end performnace parameters. | | | |
| totalCountersNearEndLmParameters | TotalCountersLmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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   * 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. | | | |
| bidirUnavailableIntervals | Integer  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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). | | | |

**Table 818 – Attributes for class *EthOnDemandLmPerformanceData***

### EthOnDemandMeasurementJobControlSink

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sinkMepId | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| sourceAddress | 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 peer MEP. See G.8013 for details. | | | |
| priority  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::priority* | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::testIdentifier* | Integer | 1 | RW | OpenModelAttribute   * 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. | | | |
| messagePeriod  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::messagePeriod* | Integer  Default value: *1000* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::measurementInterval* | Integer  Default value: *0* | 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 (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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::repetitionPeriod* | RepetitionPeriod  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::timeOfTheDayAlignment* | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::offsetFromTimeOfTheDay* | Integer | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityDeltaTime* | Integer  Default value: *1* | 0..1 | RW | OpenModelAttribute   * 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/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s. | | | |
| flrAvailabilityThreshold  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityThreshold* | Real  Default value: *0.1* | 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilitySamples* | Integer  Default value: *10* | 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. | | | |

**Table 819 – Attributes for class *EthOnDemandMeasurementJobControlSink***

### EthOnDemandMeasurementJobControlSource

Description:

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

Description:

* Optional attributes: dataTlvLength, testIdentifier

Description:

* 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.

Description:

* Basic attributes: destinationAddress, priority

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| controllerMepId | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| oamPduGenerationType | OamPduGenerationType | 1 | RW | OpenModelAttribute   * 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   * 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  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::priority* | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::testIdentifier* | Integer | 1 | RW | OpenModelAttribute   * 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. | | | |
| messagePeriod  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::messagePeriod* | Integer  Default value: *1000* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::measurementInterval* | Integer  Default value: *0* | 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 (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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::repetitionPeriod* | RepetitionPeriod  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::timeOfTheDayAlignment* | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::offsetFromTimeOfTheDay* | Integer | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityDeltaTime* | Integer  Default value: *1* | 0..1 | RW | OpenModelAttribute   * 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/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s. | | | |
| flrAvailabilityThreshold  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityThreshold* | Real  Default value: *0.1* | 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilitySamples* | Integer  Default value: *10* | 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. | | | |

**Table 820 – Attributes for class *EthOnDemandMeasurementJobControlSource***

### EthOnDemandSingleEndedMeasurementJob

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethOnDemandMeasurementJobControlSource | EthOnDemandMeasurementJobControlSource | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 821 – Attributes for class *EthOnDemandSingleEndedMeasurementJob***

### EthProActive1DmPerformanceData

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalNearEnd1DmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |

**Table 822 – Attributes for class *EthProActive1DmPerformanceData***

### EthProActive1DmSourcePerformanceData

Description:

* 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:

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

### EthProActive1LmPerformanceData

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalNearEnd1LmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| totalCountersNearEnd1LmParameters | TotalCountersLmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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. | | | |

**Table 823 – Attributes for class *EthProActive1LmPerformanceData***

### EthProActive1LmSourcePerformanceData

Description:

* 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:

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

### EthProActiveDmPerformanceData

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalBiDirDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical bidirectional performnace parameters. | | | |
| statisticalFarEndDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical far end performnace parameters. | | | |
| statisticalNearEndDmParameters | StatisticalDmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |

**Table 824 – Attributes for class *EthProActiveDmPerformanceData***

### EthProActiveDualEndedMeasurementJob

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethProActiveMeasurementJobControlSource | EthProActiveMeasurementJobControlSource | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| \_ethProActiveMeasurementJobControlSink | EthProActiveMeasurementJobControlSink | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 825 – Attributes for class *EthProActiveDualEndedMeasurementJob***

### EthProActiveLmPerformanceData

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| statisticalFarEndLmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical far end performnace parameters. | | | |
| statisticalNearEndLmParameters | StatisticalLmPerformanceParameters | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the statistical near end performnace parameters. | | | |
| totalCountersFarEndLmParameters | TotalCountersLmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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. | | | |
| totalCountersNearEndLmParameters | TotalCountersLmPerformanceParameters | 0..1 | RW | OpenModelAttribute   * 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. | | | |
| bidirUnavailableIntervals | Integer  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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). | | | |

**Table 826 – Attributes for class *EthProActiveLmPerformanceData***

### EthProActiveMeasurementJobControlSink

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sinkMepId | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| sourceAddress | 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 peer MEP. See G.8013 for details. | | | |
| isEnabled | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::priority* | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::testIdentifier* | Integer | 1 | RW | OpenModelAttribute   * 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. | | | |
| messagePeriod  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::messagePeriod* | Integer  Default value: *1000* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::measurementInterval* | Integer  Default value: *0* | 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 (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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::repetitionPeriod* | RepetitionPeriod  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::timeOfTheDayAlignment* | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::offsetFromTimeOfTheDay* | Integer | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityDeltaTime* | Integer  Default value: *1* | 0..1 | RW | OpenModelAttribute   * 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/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s. | | | |
| flrAvailabilityThreshold  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityThreshold* | Real  Default value: *0.1* | 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilitySamples* | Integer  Default value: *10* | 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. | | | |

**Table 827 – Attributes for class *EthProActiveMeasurementJobControlSink***

### EthProActiveMeasurementJobControlSource

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| controllerMepId | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| destinationAddress | MacAddress | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute provides the Unicast MAC address of the intented destination. | | | |
| dataTlvLength | Integer  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::priority* | Integer  Default value: *7* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::testIdentifier* | Integer | 1 | RW | OpenModelAttribute   * 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. | | | |
| messagePeriod  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::messagePeriod* | Integer  Default value: *1000* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::measurementInterval* | Integer  Default value: *0* | 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 (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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::repetitionPeriod* | RepetitionPeriod  Default value: *0* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::timeOfTheDayAlignment* | Boolean  Default value: *true* | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::offsetFromTimeOfTheDay* | Integer | 1 | RW | OpenModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityDeltaTime* | Integer  Default value: *1* | 0..1 | RW | OpenModelAttribute   * 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/1SL frame transmission. [D31]/[CD16] [O8] The default length of time over which each Availability flr value is calculated SHOULD be 1s. | | | |
| flrAvailabilityThreshold  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilityThreshold* | Real  Default value: *0.1* | 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  Inherited: *TapiEth::ObjectClasses::EthMeasurementJobControlCommon::flrAvailabilitySamples* | Integer  Default value: *10* | 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. | | | |

**Table 828 – Attributes for class *EthProActiveMeasurementJobControlSource***

### EthProActiveSingleEndedMeasurementJob

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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:** | | | |

**Table 829 – Attributes for class *EthProActiveSingleEndedMeasurementJob***

### EthServiceIntefacePointSpec

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| phyType  Inherited: *TapiEth::ObjectClasses::EtyPac::phyType* | EtyPhyType  Default value: *UNKNOWN* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EtyPac::phyTypeList* | EtyPhyType  Default value: *NA* | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 830 – Attributes for class *EthServiceIntefacePointSpec***

### EthTerminationCommonPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| priorityRegenerate | PriorityMapping  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute models the ETHx/ETH-m \_A\_Sk\_MI\_PCP\_Config information defined in G.8021. | | | |
| etherType | VlanType  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute models the ETHx/ETH-m \_A\_Sk\_MI\_Etype information defined in G.8021. | | | |
| frametypeConfig | FrameType  Default value: *ADMIT\_ONLY\_UNTAGGED\_AND\_PRIORITY\_TAGGED\_FRAMES* | 1 | RW | OpenModelAttribute   * 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  Default value: *NA* | 0..\* | RW | OpenModelAttribute   * 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  Default value: *1* | 1 | RW | OpenModelAttribute   * 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. | | | |

**Table 831 – Attributes for class *EthTerminationCommonPac***

### EthTerminationPac

Description:

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

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethTerminationCommonPac | EthTerminationCommonPac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 832 – Attributes for class *EthTerminationPac***

### EthTestJob

Description:

* 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:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_ethOamTestLoopbackCommonPac | EthOamTestLoopbackCommonPac | 0..1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| testPattern | TestPattern  Default value: *NA* | 1 | RW | OpenModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| number | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This parameter specifies how many TST messages to be sent. | | | |

**Table 833 – Attributes for class *EthTestJob***

### EthTestJobSinkPoint

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sourceAddress | 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 peer MEP. | | | |

**Table 834 – Attributes for class *EthTestJobSinkPoint***

### EthTestResultData

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sentTstFrames | Integer | 0..1 | R | OpenModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Received TST frames. Optional in case of source only MEP. | | | |

**Table 835 – Attributes for class *EthTestResultData***

### EtyPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| phyType | EtyPhyType  Default value: *UNKNOWN* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 836 – Attributes for class *EtyPac***

### EtyTerminationCommonPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| isFtsEnabled | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute indicates whether Forced Transmitter Shutdown (FTS) is enabled or not. It models the ETYn\_TT\_So\_MI\_FTSEnable information. | | | |
| isTxPauseEnabled | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies whether the Transmit Pause process is enabled or not. It models the MI\_TxPauseEnable defined in G.8021. | | | |

**Table 837 – Attributes for class *EtyTerminationCommonPac***

### EtyTerminationPac

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| \_etyTerminationCommonPac | EtyTerminationCommonPac | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| phyType  Inherited: *TapiEth::ObjectClasses::EtyPac::phyType* | EtyPhyType  Default value: *UNKNOWN* | 1 | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Inherited: *TapiEth::ObjectClasses::EtyPac::phyTypeList* | EtyPhyType  Default value: *NA* | 0..\* | R | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 838 – Attributes for class *EtyTerminationPac***

### TrafficConditioningPac

Description:

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

Description:

* Basic attributes: codirectional, condConfigList, prioConfigList

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| prioConfigList | PriorityConfiguration  Default value: *NA* | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 839 – Attributes for class *TrafficConditioningPac***

### TrafficShapingPac

Description:

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

Description:

* Basic attribute: codirectional, prioConfigList, queueConfigList, schedConfig

Applied stereotypes:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| prioConfigList | PriorityConfiguration  Default value: *NA* | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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  Default value: *NA* | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 840 – Attributes for class *TrafficShapingPac***

## Signals

## Associations

### EthCepSpecHasCtpPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCtp | composite | Yes | EthCtpPac | 0..1 |
| \_lpSpec | none | No | EthConnectionEndPointSpec | 1 |

**Table 841 – Member ends for association *EthCepSpecHasCtpPac***

### EthCepSpecHasEtyTermPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_etyTerm | composite | Yes | EtyTerminationPac | 0..1 |
| \_lpSpec | none | No | EthConnectionEndPointSpec | 1 |

**Table 842 – Member ends for association *EthCepSpecHasEtyTermPac***

### EthCepSpecHasTermPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethTerm | composite | Yes | EthTerminationPac | 0..1 |
| \_lpSpec | none | No | EthConnectionEndPointSpec | 1 |

**Table 843 – Member ends for association *EthCepSpecHasTermPac***

### EthCsepSpecHasEthCtpCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCtpCommonPac | none | Yes | EthCtpCommonPac | 0..1 |
| ethconnectivityserviceendpointspec | none | No | EthConnectivityServiceEndPointSpec | 1 |

**Table 844 – Member ends for association *EthCsepSpecHasEthCtpCommonPac***

### EthCsepSpecHasEthTerminationCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethTerminationCommonPac | none | Yes | EthTerminationCommonPac | 0..1 |
| ethconnectivityserviceendpointspec | none | No | EthConnectivityServiceEndPointSpec | 1 |

**Table 845 – Member ends for association *EthCsepSpecHasEthTerminationCommonPac***

### EthCsepSpecHasEtyTerminationCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_etyTerminationCommonPac | none | Yes | EtyTerminationCommonPac | 0..1 |
| ethconnectivityserviceendpointspec | none | No | EthConnectivityServiceEndPointSpec | 1 |

**Table 846 – Member ends for association *EthCsepSpecHasEtyTerminationCommonPac***

### EthCtpCommonPacHasTrafficCondPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_trafficConditioningPac | composite | Yes | TrafficConditioningPac | 0..1 |
| connectionpointandadapterspec\_tapi\_eth | none | No | EthCtpCommonPac | 1 |

**Table 847 – Member ends for association *EthCtpCommonPacHasTrafficCondPac***

### EthCtpCommonPacHasTrafficShapingPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_trafficShapingPac | composite | Yes | TrafficShapingPac | 0..1 |
| connectionpointandadapterspec\_tapi\_eth | none | No | EthCtpCommonPac | 1 |

**Table 848 – Member ends for association *EthCtpCommonPacHasTrafficShapingPac***

### EthCtpPacHasEthCtpCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCtpCommonPac | none | Yes | EthCtpCommonPac | 1 |
| ethctppac | none | No | EthCtpPac | 1 |

**Table 849 – Member ends for association *EthCtpPacHasEthCtpCommonPac***

### EthLinkTraceJobHasEthCfmLinkTracePac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCfmLinkTracePac | composite | Yes | EthCfmLinkTracePac | 0..1 |
| ethlinktracejob | none | No | EthLinkTraceJob | 1 |

**Table 850 – Member ends for association *EthLinkTraceJobHasEthCfmLinkTracePac***

### EthLinkTraceResultDataHasEthCfmLinkTraceResultData

Applied stereotypes:

* StrictComposite

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

**Table 851 – Member ends for association *EthLinkTraceResultDataHasEthCfmLinkTraceResultData***

### EthLoopbackJobHasEthOamTestLoopbackCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethOamTestLoopbackCommonPac | composite | Yes | EthOamTestLoopbackCommonPac | 0..1 |
| ethloopbackjob | none | No | EthLoopbackJob | 1 |

**Table 852 – Member ends for association *EthLoopbackJobHasEthOamTestLoopbackCommonPac***

### EthMegSpecHasEthCfmMaintenanceAssociation

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCfmMaintenanceAssociation | composite | Yes | EthCfmMaintenanceAssociation | 0..1 |
| ethmegspec | none | No | EthMegSpec | 1 |

**Table 853 – Member ends for association *EthMegSpecHasEthCfmMaintenanceAssociation***

### EthMegSpecHasEthCfmMaintenanceDomain

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCfmMaintenanceDomain | composite | Yes | EthCfmMaintenanceDomain | 0..1 |
| ethmegspec | none | No | EthMegSpec | 1 |

**Table 854 – Member ends for association *EthMegSpecHasEthCfmMaintenanceDomain***

### EthMegSpecHasEthMegCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMegCommon | composite | Yes | EthMegCommon | 1 |
| ethmegspec | none | No | EthMegSpec | 1 |

**Table 855 – Member ends for association *EthMegSpecHasEthMegCommon***

### EthMepSpecHasEthMepCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepCommon | composite | Yes | EthMepCommon | 1 |
| ethmepspec | none | No | EthMepSpec | 1 |

**Table 856 – Member ends for association *EthMepSpecHasEthMepCommon***

### EthMepSpecHasEthMepSink

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepSink | composite | Yes | EthMepSink | 0..1 |
| ethmepspec | none | No | EthMepSpec | 1 |

**Table 857 – Member ends for association *EthMepSpecHasEthMepSink***

### EthMepSpecHasMepSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepSource | composite | Yes | EthMepSource | 0..1 |
| ethmepspec | none | No | EthMepSpec | 1 |

**Table 858 – Member ends for association *EthMepSpecHasMepSource***

### EthMipSpecHasEthMipCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMipCommon | composite | Yes | EthMipCommon | 1 |
| ethmipspec | none | No | EthMipSpec | 1 |

**Table 859 – Member ends for association *EthMipSpecHasEthMipCommon***

### EthOamMepServicePointHasEthMepCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepCommon | composite | Yes | EthMepCommon | 1 |
| ethoammepservicepoint | none | No | EthOamMepServicePoint | 1 |

**Table 860 – Member ends for association *EthOamMepServicePointHasEthMepCommon***

### EthOamMepServicePointHasEthMepSink

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepSink | composite | Yes | EthMepSink | 0..1 |
| ethoammepservicepoint | none | No | EthOamMepServicePoint | 1 |

**Table 861 – Member ends for association *EthOamMepServicePointHasEthMepSink***

### EthOamMepServicePointHasEthMepSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMepSource | composite | Yes | EthMepSource | 0..1 |
| ethoammepservicepoint | none | No | EthOamMepServicePoint | 1 |

**Table 862 – Member ends for association *EthOamMepServicePointHasEthMepSource***

### EthOamMipServicePointHasEthMipCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMipCommon | composite | Yes | EthMipCommon | 0..1 |
| ethoammipservicepoint | none | No | EthOamMipServicePoint | 1 |

**Table 863 – Member ends for association *EthOamMipServicePointHasEthMipCommon***

### EthOamServiceHasEthCfmMaintenanceAssociation

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCfmMaintenanceAssociation | composite | Yes | EthCfmMaintenanceAssociation | 0..1 |
| ethoamservice | none | No | EthOamService | 1 |

**Table 864 – Member ends for association *EthOamServiceHasEthCfmMaintenanceAssociation***

### EthOamServiceHasEthCfmMaintenanceDomain

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethCfmMaintenanceDomain | composite | Yes | EthCfmMaintenanceDomain | 0..1 |
| ethoamservice | none | No | EthOamService | 1 |

**Table 865 – Member ends for association *EthOamServiceHasEthCfmMaintenanceDomain***

### EthOamServiceHasEthMegCommon

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethMegCommon | composite | Yes | EthMegCommon | 1 |
| ethoamservice | none | No | EthOamService | 1 |

**Table 866 – Member ends for association *EthOamServiceHasEthMegCommon***

### EthOnDemandDualEndedHasJobControlSink

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethOnDemandMeasurementJobControlSink | composite | Yes | EthOnDemandMeasurementJobControlSink | 0..1 |
| ethondemand1waymeasurementjob | none | No | EthOnDemandDualEndedMeasurementJob | 1 |

**Table 867 – Member ends for association *EthOnDemandDualEndedHasJobControlSink***

### EthOnDemandDualEndedHasJobControlSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethOnDemandMeasurementJobControlSource | composite | Yes | EthOnDemandMeasurementJobControlSource | 0..1 |
| ethondemand1waymeasurementjob | none | No | EthOnDemandDualEndedMeasurementJob | 1 |

**Table 868 – Member ends for association *EthOnDemandDualEndedHasJobControlSource***

### EthOnDemandSingleEndedHasJobControlSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethOnDemandMeasurementJobControlSource | composite | Yes | EthOnDemandMeasurementJobControlSource | 1 |
| ethondemand2waymeasurementjob | none | No | EthOnDemandSingleEndedMeasurementJob | 1 |

**Table 869 – Member ends for association *EthOnDemandSingleEndedHasJobControlSource***

### EthProActiveDualEndedHasJobControlSink

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethProActiveMeasurementJobControlSink | composite | Yes | EthProActiveMeasurementJobControlSink | 0..1 |
| eth1waydelaymeasurementproactivejob | none | No | EthProActiveDualEndedMeasurementJob | 1 |

**Table 870 – Member ends for association *EthProActiveDualEndedHasJobControlSink***

### EthProActiveDualEndedHasJobControlSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethProActiveMeasurementJobControlSource | composite | Yes | EthProActiveMeasurementJobControlSource | 0..1 |
| eth1waydelaymeasurementproactivejob | none | No | EthProActiveDualEndedMeasurementJob | 1 |

**Table 871 – Member ends for association *EthProActiveDualEndedHasJobControlSource***

### EthProActiveSingleEndedHasJobControlSource

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethProActiveMeasurementJobControlSource | composite | Yes | EthProActiveMeasurementJobControlSource | 1 |
| ethframedelay2wayproactivejob | none | No | EthProActiveSingleEndedMeasurementJob | 1 |

**Table 872 – Member ends for association *EthProActiveSingleEndedHasJobControlSource***

### EthTerminationPacHasEthTerminationCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethTerminationCommonPac | none | Yes | EthTerminationCommonPac | 1 |
| ethterminationpac | none | No | EthTerminationPac | 1 |

**Table 873 – Member ends for association *EthTerminationPacHasEthTerminationCommonPac***

### EthTestJobHasEthOamTestLoopbackCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethOamTestLoopbackCommonPac | composite | Yes | EthOamTestLoopbackCommonPac | 0..1 |
| ethtestspec | none | No | EthTestJob | 1 |

**Table 874 – Member ends for association *EthTestJobHasEthOamTestLoopbackCommonPac***

### EthTestJobHasEthTestJobSinkPoint

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_ethTestJobSinkPoint | composite | Yes | EthTestJobSinkPoint | 0..1 |
| ethtestjob | none | No | EthTestJob | 1 |

**Table 875 – Member ends for association *EthTestJobHasEthTestJobSinkPoint***

### EtyTerminationPacHasEtyTerminationCommonPac

Applied stereotypes:

* StrictComposite

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |
| \_etyTerminationCommonPac | composite | Yes | EtyTerminationCommonPac | 1 |
| etyterminationpac | none | No | EtyTerminationPac | 1 |

**Table 876 – Member ends for association *EtyTerminationPacHasEtyTerminationCommonPac***

## Abstractions

## Data Types

### AddressTuple

Description:

* 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. | | | |

**Table 877 – Attributes for data type *AddressTuple***

### BandwidthProfile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| bwProfileType | BandwidthProfileType | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| committedInformationRate | CapacityValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| committedBurstSize | CapacityValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| peakInformationRate | CapacityValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| peakBurstSize | CapacityValue | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| colorAware | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| couplingFlag | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 878 – Attributes for data type *BandwidthProfile***

### BandwidthReport

Description:

* Data type for the bandwidth report.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sourceMacAddress | MacAddress | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  The sourceMacAddress is the address from the far end. | | | |
| portId | Integer | 1 | RW | OpenModelAttribute   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute returns the current bandwidth. | | | |

**Table 879 – Attributes for data type *BandwidthReport***

### ControlFrameFilter

Description:

* 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the "All LANs Bridge Management Group Address". | | | |
| 01-80-C2-00-00-00 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the STP/RSTP/MSTP protocol address. | | | |
| 01-80-C2-00-00-01 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-07 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the Metro Ethernet Forum E-LMI protocol group address. | | | |
| 01-80-C2-00-00-08 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the Provider Bridge MVRP address. | | | |
| 01-80-C2-00-00-0E | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-20 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the Customer and Provider Bridge MMRP address. | | | |
| 01-80-C2-00-00-21 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute identifies the Customer Bridge MVRP address. | | | |
| 01-80-C2-00-00-22 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-23 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-24 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-25 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-26 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-27 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-28 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-29 | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2A | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2B | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2C | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2D | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2E | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |
| 01-80-C2-00-00-2F | Boolean  Default value: *false* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Reserved for future standardization. | | | |

**Table 880 – Attributes for data type *ControlFrameFilter***

### LinkTraceResult

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| sourceAddress | MacAddress | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  G.8052: This attribute contains the source MAC Address of an individual LTR frame result. | | | |
| timeToLive | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  G.8052: This attribute contains the Time To Live (TTL) value of an individual LTR frame result. | | | |
| dataTlvLength | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  G.8052: This attribute contains the length (in number of octets) of the Data TLV of an individual LTR frame result. | | | |

**Table 881 – Attributes for data type *LinkTraceResult***

### LldpChassisIdSubtype

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.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| chassisComponent | String | 1 | RW | OpenModelAttribute   * 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   * 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   * 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   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Represents a chassis identifier based on a locally defined value. | | | |

**Table 882 – Attributes for data type *LldpChassisIdSubtype***

### LldpPortIdSubtype

Description:

* 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** |
| interfaceAlias | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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). | | | |
| networkAddress | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  Represents a port identifier based on a value locally assigned. | | | |

**Table 883 – Attributes for data type *LldpPortIdSubtype***

### MaintenanceAssociationName

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| ieeeReserved | String  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  IEEE P802.1Qcx/D0.3: MEF 38: Primary VLAN ID. 12 bits represented in a 2-octet integer. | | | |
| charString | String | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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" | | | |
| unsignedInt16 | Integer | 1 | RW | OpenModelAttribute   * 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. | | | |
| rfc2865VpnId | String | 1 | RW | OpenModelAttribute   * 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"; | | | |
| iccFormat | String | 1 | RW | OpenModelAttribute   * 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" | | | |

**Table 884 – Attributes for data type *MaintenanceAssociationName***

### ModifyCrossConnectionData

### PriorityConfiguration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| priority | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |
| queueId | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey: yes – part: 1 * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:** | | | |

**Table 885 – Attributes for data type *PriorityConfiguration***

### PriorityMapping

Description:

* 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  Default value: *0* | 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 0. | | | |
| Priority1 | Integer  Default value: *1* | 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 1. | | | |
| Priority2 | Integer  Default value: *2* | 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 2. | | | |
| Priority3 | Integer  Default value: *3* | 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 3. | | | |
| Priority4 | Integer  Default value: *4* | 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 4. | | | |
| Priority5 | Integer  Default value: *5* | 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 5. | | | |
| Priority6 | Integer  Default value: *6* | 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 6. | | | |
| Priority7 | Integer  Default value: *7* | 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. | | | |

**Table 886 – Attributes for data type *PriorityMapping***

### QueueConfiguration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| queueId | Integer  Default value: *NA* | 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  Default value: *NA* | 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  Default value: *NA* | 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. | | | |

**Table 887 – Attributes for data type *QueueConfiguration***

### SamplesDmPerformanceParameters

Description:

* 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. | | | |
| frameDelayList | Integer | 0..\* | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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). | | | |

**Table 888 – Attributes for data type *SamplesDmPerformanceParameters***

### SchedulingConfiguration

Description:

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

### StatisticalDmPerformanceParameters

Description:

* This data type contains the statistical delay measurement performance parameters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| minimumFrameDelay | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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). | | | |
| minimumFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| averageFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| maximumFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| minimumInterFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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 | | | |
| averageInterFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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 | | | |
| maximumInterFrameDelayVariation | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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 | | | |

**Table 889 – Attributes for data type *StatisticalDmPerformanceParameters***

### StatisticalLmPerformanceParameters

Description:

* This data type contains the statistical loss measurement performance parameters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| minimumFrameLossRatio | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the minimum frame loss ratio calculated over a period of time. | | | |
| averageFrameLossRatio | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the average frame loss ratio calculated over a period of time. | | | |
| maximumFrameLossRatio | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the maximum frame loss ratio calculated over a period of time. | | | |
| hliCount | Integer  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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. | | | |
| unavailableIntervals | Integer  Default value: *0* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  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). | | | |

**Table 890 – Attributes for data type *StatisticalLmPerformanceParameters***

### TotalCountersLmPerformanceParameters

Description:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| totalTransmittedFrames | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the total number of frames transmitted. | | | |
| totalLostFrames | Integer | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute contains the total number of frames lost. | | | |
| totalFrameLossRatio | Real | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * 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. | | | |

**Table 891 – Attributes for data type *TotalCountersLmPerformanceParameters***

### TrafficConditioningConfiguration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |
| cir | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute indicates the Committed Information Rate in bits/s. | | | |
| cbs | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute indicates the Committed Burst Size in bytes. | | | |
| eir | Integer  Default value: *NA* | 1 | RW | OpenModelAttribute   * isKey:No * isInvariant: false * valueRange: no range constraint * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NA |
| **Description:**  This attribute indicates the Excess Information Rate in bits/s. | | | |
| ebs | Integer  Default value: *NA* | 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  Default value: *NA* | 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  Default value: *NA* | 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  Default value: *NA* | 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. | | | |

**Table 892 – Attributes for data type *TrafficConditioningConfiguration***

## Enumerations

### AdminState

Contains Enumeration Literals:

* LOCK:
* NORMAL:

### AssociationIdPermissionTypes

Description:

* 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.
* SEND\_ID\_NONE:
* SEND\_ID\_CHASSIS\_MANAGE:
* SEND\_ID\_MANAGE:
* SEND\_ID\_CHASSIS:

### BandwidthProfileType

Contains Enumeration Literals:

* MEF\_10.x:
* RFC\_2697:
* RFC\_2698:
* RFC\_4115:

### ColourMode

Contains Enumeration Literals:

* COLOUR\_BLIND:
* COLOUR\_AWARE:

### CsfConfig

Contains Enumeration Literals:

* DISABLED:
  + This literal covers the following states of the CSF related MI informations: - MI\_CSF\_Enable is false - MI\_CSFrdifdi\_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\_CSFrdifdi\_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\_CSFrdifdi\_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\_CSFrdifdi\_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\_CSFrdifdi\_Enable is false - MI\_CSFdci\_Enable is true.

### 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.

### EthOamJobType

Contains Enumeration Literals:

* ETH\_1DM:
* ETH\_1SLM:
* ETH\_LM\_CCM:
* ETH\_LM\_LMM:
* ETH\_SLM:
* ETH\_DM:
* ETH\_LTC:
* ETH\_LBK:
* ETH\_TEST:

### 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, 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.
* MAXIMUM\_FRAME\_DELAY\_VARIATION:
  + 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.
* AVERAGE\_FRAME\_DELAY\_VARIATION:
  + 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.
* MINIMUM\_INTER\_FRAME\_DELAY\_VARIATION:
  + 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
* 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:

### 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:

### FrameType

Contains Enumeration Literals:

* ADMIT\_ONLY\_VLAN\_TAGGED\_FRAMES:
* ADMIT\_ONLY\_UNTAGGED\_AND\_PRIORITY\_TAGGED\_FRAMES:
* ADMIT\_ALL\_FRAMES:

### LTMflags

Description:

* 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).

### LinkTraceEgressActionFieldValue

Description:

* 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.

### LinkTraceIngressActionFieldValue

Description:

* 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.

### LinkTraceRelayActionFieldValue

Description:

* 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.

### MaintenanceDomainIdPermissionTypes

Description:

* 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 te 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.

### MaintenanceDomainNameType

Description:

* 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.

### MessagePeriod

Description:

* 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:

### OamPduGenerationType

Description:

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

Contains Enumeration Literals:

* SINGLE\_INSTANCE:
* REPETITIVE\_INSTANCE:
* SINGLE\_SERIES:
* REPETITIVE\_SERIES:

### OamPeriod

Description:

* Provides the frequency for the OAM PDU insertion.

Contains Enumeration Literals:

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

### PcpCoding

Description:

* 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

### RepetitionPeriod

Description:

* 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:

### TestPattern

Description:

* The following values of pattern types are defined: "Null signal without CRC-32" "Null signal with CRC-32" "PRBS 2^31-1 without CRC-32" "PRBS 2^31-1 with CRC-32".

Contains Enumeration Literals:

* NULL\_SIGNAL\_WITHOUT\_CRC\_32:
* NULL\_SIGNAL\_WITH\_CRC\_32:
* PRBS\_2^31\_1\_WITHOUT\_CRC\_32:
* PRBS\_2^31\_1\_WITH\_CRC\_32:

### VlanType

Description:

* This enumeration contains the Ethertypes defined in IEEE 802.1Q.

Contains Enumeration Literals:

* C\_Tag:
  + 0x8100
* S\_Tag:
  + 0x88a8
* I\_Tag:
  + 88-e7

## Primitives

### MacAddress

Description:

* 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).

### Vid

Description:

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