

TAPI UML Model

Version 2.4.0

ONF Document Type: Technical Recommendation

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Open Networking Foundation  
1000 El Camino Real, Suite 100, Menlo Park, CA 94025  
[www.opennetworking.org](http://www.opennetworking.org)

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Document History

| **Version** | **Date** | **Description of Change** |
| --- | --- | --- |
| 2.3 | May 27, 2021 | Model Dump  *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).* |
| 2.4.0 | December 2022 |  |

# Virtual Network Model

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<gendoc><drop/>

## Diagrams

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<image object='[d.getDiagram()/]' maxW='true' keepH='false' keepW=’false’><drop/>

</image><drop/>

**Figure 1 – Diagram *[d.name/]***

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## Classes

[for (cl:Class | self.eAllContents(Class)->sortedBy(name))]<drop/>

### [cl.name/]

[for (co:Comment | cl.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

Applied stereotypes:

[for (st:Stereotype | cl.getAppliedStereotypes())]<drop/>

* [st.name/]

[for (oa:Property|st.ownedAttribute)]<drop/>

* [if (not oa.name.contains('base'))][oa.name/]: [if (not cl.getValue(st, oa.name).oclIsUndefined())][if oa.name.contains('condition')][cl.getValue(st, oa.name).oclAsType(String)/] [else][cl.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/][/if][else]<drop/>[/if]

[/if] <drop/>

[/for]<drop/>

[/for]<drop/>

[if cl.allAttributes()->notEmpty()]<drop/>

<table><drop/>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |

[for (p:Property|cl.allAttributes())]<drop/>

| [p.name/]  [if p.qualifiedName.contains(cl.name)][else]Inherited: *[p.qualifiedName/]*[/if] | [p.type.name/]  [if (not(p.default.oclIsUndefined()))]<drop/>  Default value: *[p.default/]*  [/if]<drop/> | [if(p.lower=p.upper)] [p.lower/] [else][p.lower/]..[if(p.upper=-1)]\*[else][p.upper/][/if][/if] | [if(p.isReadOnly)]R[else]RW[/if] | [for (st:Stereotype | p.getAppliedStereotypes())]<drop/>  [st.name/]  [for(oa:Property|st.ownedAttribute)]<drop/>   * [if oa.name.contains('attribute')]AVC: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('isInvariant')]isInvariant: [p.getValue(st, oa.name).oclAsType(Boolean)/]   [else]<drop/>   * [if oa.name.contains('partOfObjectKey')]isKey:[if (p.getValue(st, oa.name).oclAsType(Integer))>0] yes – part: [p.getValue(st, oa.name).oclAsType(Integer)/] [else] No [/if]   [else]<drop/>   * [if oa.name.contains('value')]valueRange: [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(String).clean()/][else] no range constraint [/if]   [else]<drop/>   * [if oa.name.contains('support')]support: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('condition')][if (not p.getValue(st, oa.name).oclIsUndefined())]condition:[p.getValue(st, oa.name).oclAsType(String).clean()/][else] <drop/> [/if]   [else]<drop/>   * [if oa.name.contains('passedByRef')] [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(Boolean)/][else] undefined [/if]   [else]<drop/>   * [if oa.name.contains('reference')][if (not p.getValue(st, oa.name).oclIsUndefined())]reference:[p.getValue(st, oa.name).oclAsType(String).clean()/][else] <drop/> [/if]   [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/for]<drop/>  [/for]<drop/> |
| --- | --- | --- | --- | --- |
| **Description:**  [for (c:Comment | p.ownedComment)] <drop/>  [c.\_body.clean()/][/for] | | | |

[/for]<drop/>

**Table 1 – Attributes for class *[cl.name/]***

</table><drop/>

[else][/if]<drop/>

[/for]<drop/>

## Signals

[for (si:Signal | self.eAllContents(Signal)->sortedBy(name))]<drop/>

### [si.name/]

[for (co:Comment | si.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

Applied stereotypes:

[for (st:Stereotype | si.getAppliedStereotypes())]<drop/>

* [st.name/]

[for (oa:Property|st.ownedAttribute)]<drop/>

* [if (not oa.name.contains('base'))][oa.name/]: [if (not si.getValue(st, oa.name).oclIsUndefined())][if oa.name.contains('condition')][si.getValue(st, oa.name).oclAsType(String)/] [else][si.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/][/if][else]<drop/>[/if]

[/if] <drop/>

[/for]<drop/>

[/for]<drop/>

[if si.allAttributes()->notEmpty()]<drop/>

<table><drop/>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |

[for (p:Property|si.allAttributes())]<drop/>

| [p.name/]  [if p.qualifiedName.contains(si.name)][else]Inherited: *[p.qualifiedName/]*[/if] | [p.type.name/]  [if (not(p.default.oclIsUndefined()))]<drop/>  Default value: *[p.default/]*  [/if]<drop/> | [if(p.lower=p.upper)] [p.lower/] [else][p.lower/]..[if(p.upper=-1)]\*[else][p.upper/][/if][/if] | [if(p.isReadOnly)]R[else]RW[/if] | [for (st:Stereotype | p.getAppliedStereotypes())]<drop/>  [st.name/]  [for(oa:Property|st.ownedAttribute)]<drop/>   * [if oa.name.contains('attribute')]AVC: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('isInvariant')]isInvariant: [p.getValue(st, oa.name).oclAsType(Boolean)/]   [else]<drop/>   * [if oa.name.contains('partOfObjectKey')]isKey:[if (p.getValue(st, oa.name).oclAsType(Integer))>0] yes – part: [p.getValue(st, oa.name).oclAsType(Integer)/] [else] No [/if]   [else]<drop/>   * [if oa.name.contains('value')]valueRange: [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(String).clean()/][else] no range constraint [/if]   [else]<drop/>   * [if oa.name.contains('support')]support: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('condition')][if (not p.getValue(st, oa.name).oclIsUndefined())]condition:[p.getValue(st, oa.name).oclAsType(String).clean()/][else] <drop/> [/if]   [else]<drop/>   * [if oa.name.contains('passedByRef')] [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(Boolean)/][else] undefined [/if]   [else]<drop/>   * [if oa.name.contains('reference')][if (not p.getValue(st, oa.name).oclIsUndefined())]reference:[p.getValue(st, oa.name).oclAsType(String).clean()/][else] <drop/> [/if]   [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/for]<drop/>  [/for]<drop/> |
| --- | --- | --- | --- | --- |
| **Description:**  [for (c:Comment | p.ownedComment)] <drop/>  [c.\_body.clean()/][/for] | | | |

[/for]<drop/>

</table><drop/>

[else][/if]<drop/>

[/for]<drop/>

## Associations

[for (as:Association | self.eAllContents(Association)->sortedBy(name))]<drop/>

### [as.name/]

[for (co:Comment | as.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

Applied stereotypes:

[for (st:Stereotype | as.getAppliedStereotypes())]<drop/>

* [st.name/]

[for (oa:Property|st.ownedAttribute)]<drop/>

* [if (not oa.name.contains('base'))][oa.name/]: [if (not as.getValue(st, oa.name).oclIsUndefined())][if oa.name.contains('condition')][as.getValue(st, oa.name).oclAsType(String)/] [else] [if oa.name.contains('reference')][as.getValue(st, oa.name).oclAsType(String)/] [else] [as.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/][/if][/if][else]<drop/>[/if]

[/if] <drop/>

[/for]<drop/>

[/for]<drop/>

[if as.memberEnd->notEmpty()]<drop/>

<table><drop/>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Association end role name** | **Aggreg. type** | **Navigable** | **Target Class** | **Mult.** |

[for (p:Property|as.memberEnd)]<drop/>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| [p.name/] | [p.aggregation/] | [if (p.isNavigable())]Yes[else]No[/if] | [if (not (p.type.name.oclIsUndefined()))][p.type.name/][/if] | [if(p.lower=p.upper)]1[else][p.lower/]..[if(p.upper=-1)]\*[else][p.upper/][/if][/if] |

[/for]<drop/>

**Table 1 – Member ends for association *[as.name/]***

</table><drop/>

[else][/if]<drop/>

[/for]<drop/>

## Abstractions

[for (ab:Abstraction | self.eAllContents(Abstraction)->sortedBy(name))]<drop/>

### [ab.name/]

[if ab.getAppliedStereotypes()->notEmpty()]

<table><drop/>

|  |  |  |
| --- | --- | --- |
| **Augmenting Class** | **Augmented Class** | **Comment** |
| [ab.client.name/] | [ab.supplier.name/] | [for (co:Comment | ab.ownedComment)]<drop/>  <dropEmpty>[co.\_body.clean()/]</dropEmpty>  [/for]<drop/> |
| [for (st:Stereotype | ab.getAppliedStereotypes())]<drop/>  [for (oa:Property|st.ownedAttribute)]<drop/>  [if oa.name.contains('target')][oa.name/]: “[ab.getValue(st, oa.name).oclAsType(OclAny)/]” [else]<drop/>[/if]  [/for]<drop/>  [/for]<drop/> | | |

**Table 1 – Member ends for class abstraction *[ab.name/]***

</table><drop/>

[else]

<table><drop/>

|  |  |
| --- | --- |
| **Augmenting Enumeration** | **Augmented Enumeration** |
| [ab.client.name/]  [for (e:EnumerationLiteral|ab.client.oclAsType(Enumeration).ownedLiteral)]<drop/>   * [e.name/]   [/for]<drop/> | [ab.supplier.name/]  [for (e:EnumerationLiteral|ab.supplier.oclAsType(Enumeration).ownedLiteral)]<drop/>   * [e.name/]   [/for]<drop/> |
| **Comment**  [for (co:Comment | ab.ownedComment)]<drop/>  <dropEmpty>[co.\_body.clean()/]</dropEmpty>  [/for]<drop/> | |

**Table 1 – Member ends for enum abstraction *[ab.name/]***

</table>[/if]<drop/>

[/for]<drop/>

## Data Types

[for (dt:DataType | self.eAllContents(DataType)->sortedBy(name))]<drop/>

[if dt.oclIsTypeOf(DataType)]<drop/>

### [dt.name/]

[for (co:Comment | dt.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

[if dt.ownedAttribute->notEmpty()]<drop/>

<table><drop/>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Mult.** | **Access** | **Stereotypes** |

[for (p:Property|dt.allAttributes())]<drop/>

| [p.name/]  [if p.qualifiedName.contains(dt.name)][else]Inherited: *[p.qualifiedName/]*[/if] | [p.type.name/]  [if (not(p.default.oclIsUndefined()))]<drop/>  Default value: *[p.default/]*  [/if]<drop/> | [if(p.lower=p.upper)] [p.lower/] [else][p.lower/]..[if(p.upper=-1)]\*[else][p.upper/][/if][/if] | [if(not(p.isReadOnly))]RW[else]R[/if] | [for (st:Stereotype | p.getAppliedStereotypes())]<drop/>  [st.name/]  [for(oa:Property|st.ownedAttribute)]<drop/>   * [if oa.name.contains('attribute')]AVC: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('isInvariant')]isInvariant: [p.getValue(st, oa.name).oclAsType(Boolean)/]   [else]<drop/>   * [if oa.name.contains('partOfObjectKey')]isKey:[if (p.getValue(st, oa.name).oclAsType(Integer))>0] yes – part: [p.getValue(st, oa.name).oclAsType(Integer)/] [else] No [/if]   [else]<drop/>   * [if oa.name.contains('value')]valueRange: [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(String).clean()/][else] no range constraint [/if]   [else]<drop/>   * [if oa.name.contains('support')]support: [p.getValue(st, oa.name).oclAsType(EnumerationLiteral).name/]   [else]<drop/>   * [if oa.name.contains('condition')][if (not p.getValue(st, oa.name).oclIsUndefined())]condition:[p.getValue(st, oa.name).oclAsType(String).clean()/][else] <drop/> [/if]   [else]<drop/>   * [if oa.name.contains('passedByRef')] [if (not p.getValue(st, oa.name).oclIsUndefined())][p.getValue(st, oa.name).oclAsType(Boolean)/][else] undefined [/if]   [else]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/if]<drop/>  [/for]<drop/>  [/for]<drop/> |
| --- | --- | --- | --- | --- |
| **Description:**  [for (c:Comment | p.ownedComment)] <drop/>  [c.\_body.clean()/][/for] | | | |

[/for]<drop/>

**Table 1 – Attributes for data type *[dt.name/]***

</table><drop/>

[else][/if]<drop/>

[else][/if]<drop/>

[/for]<drop/>

## Enumerations

[for (dt:DataType | self.eAllContents(DataType)->sortedBy(name))]<drop/>

[if dt.oclIsTypeOf(Enumeration)]<drop/>

### [dt.name/]

[for (co:Comment | dt.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

Contains Enumeration Literals:

[for (e:EnumerationLiteral|dt.oclAsType(Enumeration).ownedLiteral)]<drop/>

* [e.name/]:
  + [for (co:Comment | e.ownedComment)]<drop/>
  + <dropEmpty>[co.\_body.clean()/]
  + </dropEmpty>[/for]<drop/>

[/for]<drop/>

[for (e1:EnumerationLiteral|dt.oclAsType(Enumeration).generalization.general.oclAsType(Enumeration).ownedLiteral)]<drop/>

* [e1.name/]:

[/for]<drop/>

[for (e2:EnumerationLiteral|dt.oclAsType(Enumeration).generalization.general.oclAsType(Enumeration).generalization.general.oclAsType(Enumeration).ownedLiteral)]<drop/>

* [e2.name/]:

[/for]<drop/>

[else] [/if]<drop/>

[/for]<drop/>

## Primitives

[for (dt:DataType | self.eAllContents(DataType)->sortedBy(name))]<drop/>

[if dt.oclIsTypeOf(PrimitiveType)]<drop/>

### [dt.name/]

[for (co:Comment | dt.ownedComment)]<drop/>

Description:

* <dropEmpty>[co.\_body.clean()/]</dropEmpty>

[/for]<drop/>

[else] [/if]<drop/>

[/for]<drop/>

</gendoc><drop/>