ETSI GR NFV-IFA 016 V2.5.1 (2018-08)



Network Functions Virtualisation (NFV) Release 2; Information Modeling; Papyrus Guidelines

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Reference

RGR/NFV-IFA016ed251

Keywords

information model, model, NFV

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Foreword

This Group Report (GR) has been produced by ETSI Industry Specification Group (ISG) Network Functions Virtualisation (NFV).

Modal verbs terminology

In the present document "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the <u>ETSI Drafting Rules</u> (Verbal forms for the expression of provisions).

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1 Scope

The present document gives guidelines for the use of Papyrus [i.1] when creating or maintaining NFV UML[®] [i.2] information model.

2 References

2.1 Normative references

Normative references are not applicable in the present document.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1]	Papyrus Eclipse TM UML [®] Modeling Tool.
NOTE:	Available at <u>https://www.eclipse.org/papyrus/</u> .
[i.2]	Eclipse TM Modeling Tools.
NOTE:	Available at https://www.eclipse.org/downloads/packages/.
[i.3]	OMG [™] Unified Modeling Language [™] (UML [®]) specifications 2.5.0.
NOTE:	Available at <u>http://www.omg.org/spec/UML/</u> .
[i.4]	ONF TM TR-515: "Open Networking Foundation Papyrus Guidelines 1.2" September 2016.
[i.5]	ETSI GR NFV-IFA 017: "Network Functions Virtualisation (NFV) Release 2; Information Modeling; UML Modeling Guidelines".
[i.6]	Eclipse TM Gendoc website.
NOTE:	Available at <u>http://www.eclipse.org/gendoc/</u> .
[i.7]	ETSI GR NFV-IFA 015: "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Report on NFV Information Model".
[i.8]	ETSI GR NFV-IFA 024: "Network Function Virtualisation (NFV) Release 2; Information Modeling; Report on External Touchpoints related to NFV Information Model".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

IDE	Integrated Development Environment
JVM	Java Virtual Machine
MS	Microsoft®
ONF TM	Open Networking Foundation

UML[®] Unified Model Language

4 Overview

The present document provides information for putting in operation and for using the Open Source tool Papyrus [i.1] and the Gendoc plugin [i.6].

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The Papyrus tool is used to edit the NFV Information Model and Gendoc [i.6] is an Eclipse[™] plug-in integrated with Papyrus that allows generating MS Word[®] documentation of a model from a template.

The UML® Modeling Guidelines are defined in ETSI GR NFV-IFA 017 [i.5].

The ONFTM Papyrus Guidelines (see ONFTM TR-515 [i.4]) have been used as a basis for these guidelines.

5 Getting Papyrus running

5.1 Introduction

The Open Source UML[®] tool Papyrus (see [i.1] is a plug-in for the Open Source integrated development environment (IDE) EclipseTM.

Current tool versions:

- Papyrus version 3.2.x or 3.3.x
- Gendoc version 0.6.x (V0.6.0)

This clause explains how to get Papyrus running and how to create a model.

5.2 Downloading Papyrus

The instructions to download Papyrus can be found in the Papyrus Download page:

https://www.eclipse.org/papyrus/download.html.

The basic procedure is to setup Papyrus with update sites as summarized on the download page:

- The most basic procedure for installing Papyrus consists in installing the Eclipse Modeling Package for your own platform.
- Then, use the discovery interface ("Help" > "Install Modeling Component") and select Papyrus.
- Install the latest release from Papyrus. See instructions below "Papyrus Update sites".

These steps will be detailed in this clause.

The Oxygen Eclipse Modeling Tools can be downloaded from the Oxygen download page: <u>https://www.eclipse.org/downloads/packages/release/Oxygen/3</u>.

NOTE: The "EclipseTM Modeling Tools" package needs to be downloaded, not any other package.



Package Description

The Modeling package provides tools and runtimes for building model-based applications. You can use it to graphically design domain models, to leverage those models at design time by creating and editing dynamic instances, to collaborate via Eclipse's team support with facilities for comparing and merging models and model instances structurally, and finally to generate Java code from those models to produce complete applications. In addition, via the package's discover catalog, you can easily install a wide range of additional powerful, model-based tools and runtimes to suit your specific needs. Download Links

Windows 32-bit Windows 64-bit Mac OS X (Cocoa) 64-bit Linux 32-bit Linux 64-bit

Downloaded 27,879 Times

Figure 5.2-1: Eclipse Oxygen Modeling Tools Download Page

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Eclipse Oxygen Modeling Tools requires a 1.8 compatible JVM.

Once downloaded, Eclipse[™] cannot be "installed" on the target machine. The zip-file needs to be extracted in a new folder as shown on figure 5.2-2:

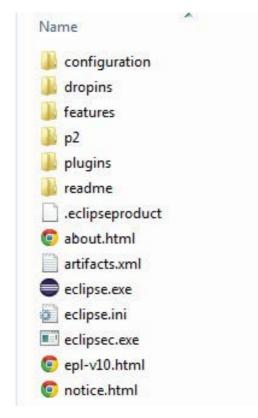


Figure 5.2-2: Content of the Eclipse Folder after Extracting the Zip-file

To launch EclipseTM, double-click on the Eclipse.exe file.

The initial Eclipse Welcome icon, shown in figure 5.2-3 appears.



Figure 5.2-3: Initial Eclipse Welcome Icon

After launching Papyrus, a default workspace folder is created in the home directory (.../users/<users name>/). The workspace configuration information is contained in the .metadata folder (which is automatically created):

workspace
.metadata

Any empty (need not be empty but is recommended) folder - anywhere - can be used as the workspace-folder. The workspace can be selected during the start of Papyrus.

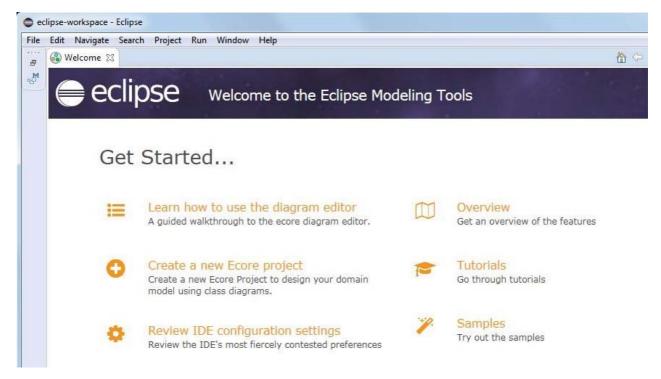


Figure 5.2-4: Initial Welcome page of Eclipse

Figure 5.2-4 shows the initial welcome page of Eclipse.

Close the \bigotimes Welcome \bowtie tab at the upper left corner. EclipseTM is now ready for initial installation of Papyrus.

To add Papyrus, click menu Help and then Install Modeling Components as shown in figure 5.2-4a, figure 5.2-7 and figure 5.2-8.

Run Window	Help	,
X 🖉	🚳 Welcome	
	Help Contents	
	😵 Search	
	Dynamic Help	
	Key Assist Ctrl+Shift	:+L
	Tips and Tricks	
	🛒 Report Bug or Enhancement	
	Cheat Sheets	
	🍫 Perform Setup Tasks	
	🍫 Check for Updates	
	🖗 Install New Software	
	🛞 Installation Details	
	💓 Install Modeling Components	
	🍄 Eclipse Marketplace	
	🖨 About Eclipse	

Figure 5.2-4a: Installing Papyrus (1)

Select Papyrus and click

F

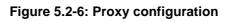


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Figure 5.2-5: Installing Papyrus (2)

If a proxy to access internet is needed, it can be configured under Windows, Preferences, then General, Network Connections as shown on figure 5.2-6.

		ĺ	Preferences								l	- 0	×
			network	Netw	ork Cor	nections						⇔ - ⊂	• •
			A General Active Provider: Native SSH2 Proxy entries										
					Sche	Host	Port	Provi	Auth	User	Password		Edit
And the second second					HTTP			Man	No				Clear
and the second se	indow Help				HTTPS SOCKS			Man	No No				
s: ▼ °8 ▼ ∰#	New Window				HTTP	Dynamic	Dyna	Native					
	New Editor												
	Hide Toolbar												
] 🥠 mode	Open Perspective Show View	;		Proxy	v bypass								
	Show view				Host		Р	rovider				Add	<u>H</u> ost
	Customize Perspective				localho			1anual				E	di <u>t</u>
	Save Perspective As				127.0.0.	1	N	lanual				Re	move
3	Reset Perspective												
5	Close Perspective												
	Close All Perspectives									Re	store <u>D</u> efaults	Ap	ply
	Navigation	•											
	Preferences		?								ОК	Can	cel



ame	Version	Id	
ि ि Papyrus for UML	3.3.0.201803070847	org.eclipse.papyrus.sdk.feature.feature.gr	
Select All Deselect All			
etails			

Figure 5.2-7: Installing Papyrus (3)

🖨 Install		
Install Details Review the items to be installed.		
Name	Version	Id
▶ 🖗 Papyrus for UML	3.3.0.201803070847	org.eclipse.papyrus.sdk.feature.fea
Size: 131 336 KB Details		14
0	< Back	Next > Finish Cancel

Figure 5.2.8: Installing Papyrus (4)

When prompted, accept the terms of the license agreement as shown on figure 5.2-9.

Install	
Review Licenses Licenses must be reviewed and accepted before the software can be in	stalled.
Licenses:	License text:
Eclipse Foundation Software User Agreement	Eclipse Foundation Software User Agreement April 9, 2014 Usage Of Content THE ECLIPSE FOUNDATION MAKES AVAILABLE SOFTWARE, DOCUMENTATION, INFORMATION AND/OR OTHER MATERIALS FOR OPEN SOURCE PROJECTS (COLLECTIVELY "CONTENT"). USE OF THE CONTENT IS GOVERNED BY THE TERMS AND CONDITIONS OF THIS AGREEMENT AND/OR THE TERMS AND CONDITIONS OF LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW. BY USING THE CONTENT, YOU
	 I accept the terms of the license agreement I do not accept the terms of the license agreement
?	< Back Next > Finish Cancel

Figure 5.2-9: Installing Papyrus (5)

After restarting Eclipse[™], switch to the Papyrus Perspective as shown on figure 5.2-10 or figure 5.2-11 by:

• either going via menu <u>W</u>indow > Perspective > <u>Open Perspective > Other...</u>:

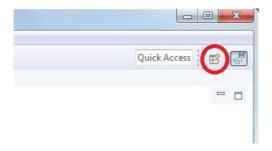
ect Run V	/indow Help			
	New Window Editor Appearance	*	1 • ♥ Φ • Φ •	
	Show View	→⊥		
	Perspective	•	Open Perspective	Other
	Navigation	•	Customize Perspective	
	Preferences	_	Save Perspective As Reset Perspective Close Perspective	

Figure 5.2-10: Open Papyrus perspective (1)

Open Perspective	
🚺 CDO Explorer	
d CVS Repository Exploring	
~ Debug	
Ecore	
an Git	
Java	
🕵 Java Browsing	
😭 Java Type Hierarchy	
Modeling (default)	
🤿 Papyrus	
In Planning	
Plug-in Development	
Carl Resource	
< Sirius	
É [©] Team Synchronizing	
Show all	
0	Cancel
Open	Cancel

Figure 5.2-11: Open Papyrus perspective (2)

• or by clicking the Open Perspective-button (\mathbb{E}) at the top right side of the screen:



and then selecting **Papyrus** as shown on figure 5.2-12.

Open Perspective	
CDO Explorer	
deg CVS Repository Exploring	
物 Debug	
S Ecore	
🔐 Git	
ava 🕹	
🕵 Java Browsing	
🚼 Java Type Hierarchy	
Modeling (default)	
Papyrus	
() Planning	
In Development	
Resource	
📌 Sirius	
🖆 Team Synchronizing	
Show all	
Open Cancel	Quick Access
Open Cancel	-

Figure 5.2-12: Open Papyrus Perspective

5.3 Papyrus overview

The outline of the Papyrus Perspective presents different windows and toolbars as shown in figure 5.3-1.

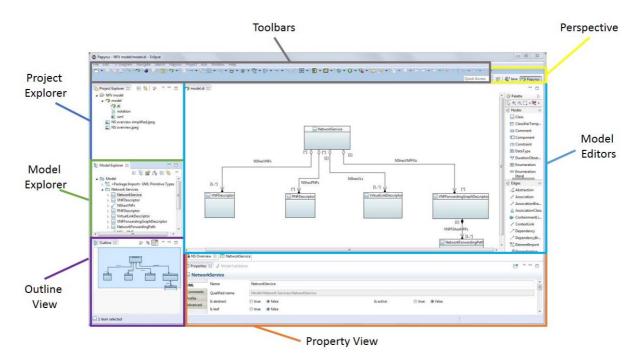


Figure 5.3-1: Outline of Papyrus perspective

- **Perspective:** it provides the modeling context and the layout of the windows, as well as the definition of the menus and toolbars. For using Papyrus, it is always set to "Papyrus".
- **Project Explorer:** it is used to manage Papyrus projects at system level. It provides a view on the model files in the workspace folder.
- **Model Explorer:** it provides the internal view of the model selected in the Project Explorer. It is a tree-based model editor for the whole model. If the Project Explorer contains several models, only one at a time can be selected to be edited in the Model Explorer.
- **Model Editors:** it allows graphic edition of the model via diagrams. Class diagrams are the only type of diagram mandated.
- **Property View:** it is a form-based editor allowing to view and edit the detailed property of a given element.
- **Outline View:** it provides a read-only view of the model presented in the Model Editor.

5.4 Installing Gendoc plugin

The Gendoc plugin is used in conjunction with a document template. The template contains instructions that enable generation of a Microsoft[®] Word[®] document. The document can include extracts from the model such as diagrams, class definitions, attribute definitions along with their stereotypes, etc. as well as figures and text directly entered into the template. This clause provides instructions on how to install Gendoc followed by guidance on construction of Gendoc templates along with example fragments of templates.

Click menu Help and then 🖗 Install New Software... as shown in figure 5.4-1.

Run Window	Help		
🕒 🔗 🕇 🖢	0	Help Contents	
	22	Search	
		Dynamic Help	
		Key Assist	Ctrl+Shift+L
		Tips and Tricks	
	æ	Report Bug or Enhancement	
		Cheat Sheets	
	ay.	Check for Updates	
	A	Install New Software	
	7	Install Papyrus Addit anal Components	
	89	Installation Details	
	7	About Papyrus	

Figure 5.4-1: Installing Gendoc (1)

Click Add... and enter the Gendoc 0.6.0 update site as shown in figure 5.4-2:

• <u>http://download.eclipse.org/gendoc/updates/releases/0.6.0/</u>

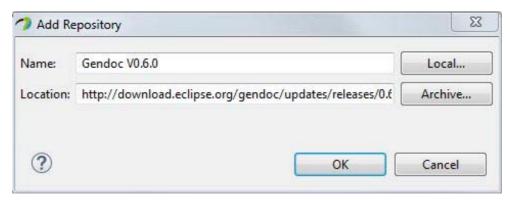


Figure 5.4-2: Installing Gendoc (2)

Select Gendoc as shown in figure 5.4-3.

🤿 Install	
Available Software Check the items that you wish to install.	
Work with: Gendoc V0.6.0 - http://download.eclipse.org/gendoc/upda	stes/releases/0.6.0/
	Find more software by working with the <u>"Available Software Sites"</u> preferences.
type filter text	
Name	Version
Select All Deselect All Details	
Show only the latest versions of available software	Hide items that are already installed
Group items by category Show only software applicable to target environment	What is <u>already installed</u> ?
Contact all update sites during install to find required software	
?	< Back Next > Finish Cancel

Figure 5.4-3: Installing Gendoc (3)

Then click \square and follow the instructions.

5.5 Importing a model

The Papyrus Perspective offers a Project Explorer and a Model Explorer as shown in figure 5.5-1.

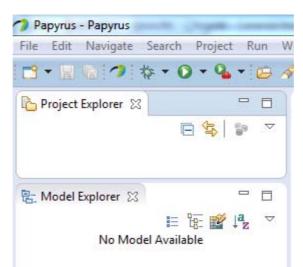


Figure 5.5-1: Papyrus Project Explorer/Model Explorer

NOTE 1: Models cannot exist on their own. Every model needs to be contained in a project.

NOTE 2: A project can contain zero or more models.

The Project Explorer \bigotimes window provides a view on the model files in the workspace-folder. The Model Explorer \bigotimes window provides the internal view of the model selected in the Project Explorer \bigotimes . The Model Explorer \bigotimes can only show (edit) one model at a time.

The actual interface specification is contained in the Information Model and the additional properties of the UML[®] artefacts are defined in a Profile Model. It is possible to organize the two models in a single project (*Alternative 1* in figure 5.5-2) or in two separate projects (*Alternative 2* in figure 5.5-2).

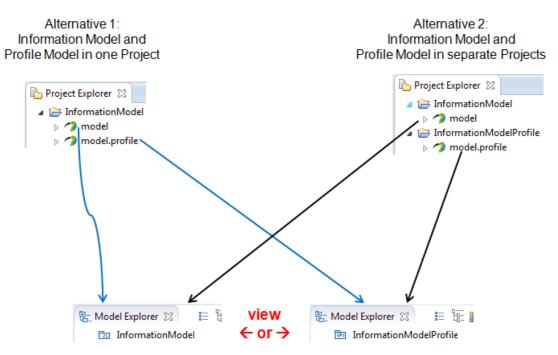


Figure 5.5-2: Papyrus Model Structure

NOTE 3: ETSI NFV Information Model is using Alternative 2: Information Model and Profile Model in separate projects.

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NOTE 4: ETSI NFV Information Model is using the OpenModel Profile and the ProfileLifecycle Profile. Those 2 profiles are provided as part of the model ZIP. The OpenInterfaceModel Profile is not used by the ETSI NFV Information Model.

Download the latest model GR (e.g. ETSI GR NFV-IFA 015 [i.7]). The extracted ZIP contains a ZIP file of the current model. For the ETSI NFV Information Model, the format is NfvInformationModelv<*version*>.zip.

The next step is to import the OpenModelProfile files and XxxModel files into Papyrus.

Right-click in the Project Explorer area to open the menu containing the Import button as shown in figure 5.5-3.

			Import	
			Select Create new projects from an archive file or directory.	Ľ
			Select an import source: type filter text	
	avigate Se <u>a</u> rch Pro	ject <u>R</u> un <u>W</u> indow <u>H</u> • O • O • F • ● E ✿ I • [©] [©] □	General G	
	New	•	 ▷ ▷ Plug-in Development ▷ ▷ Run/Debug ▷ ▷ Tasks 	
D	Show In Copy	Alt+Shift+W > Ctrl+C	 ▷ 🧀 Team ▷ 🧀 Other 	
	Copy Qualified Nam Paste	Ctrl+V		
24	Delete Import	Delete		
4	Export		C Sack Next > Einish	Cancel
D	Refresh	F5	L	

Figure 5.5-3: Importing a model (1)

Select General> Existing Projects into Workspace. Click Next> and then point via the Browse button to navigate to the folder containing the archive file to be imported as shown in figure 5.5-4.

🤉 Import		
Import Projects Select a directory to sear	ch for existing Eclipse projects.	
 Select root directory: Select archive file: Projects: 	▼ C:\Users\Flauw\OneDrive - Hewlett Packard ▼	Browse Browse
👿 OpenModelProfi	Iodel (NfvInformationModel/) le (OpenModelProfile/) rofile (ProfileLifecycleProfile/)	Select All Deselect All Refresh
Options Options Image: Search for nested property of the projects into w Image: Description of the projects that all].
Working sets Add project to work Working sets:	ing sets (+)	New Select
?	< Back Next > Finish	Cancel

Figure 5.5-4: Importing a model (2)

Always import both the Information Model and the 2 Profiles.

A double click on ¹ NfvModel</sup> in the Project Explorer opens the model in the Model Explorer as show in figure 5.5-5.

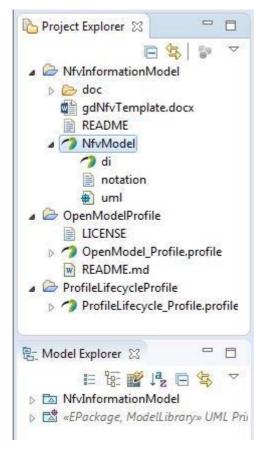


Figure 5.5-5: Open a Model

Now the model import is completed.

5.6 Deleting a Project

Projects can be deleted from the Project Explorer \bigotimes by a right click on the project (e.g. \triangleright XxxModel) and selecting **X** Delete as shown in figure 5.6-1.

-0.	rojec	t Explorer 🕱 📄 😫 🐨 🗖 🗖	*XxxM
	-	enModelProfile [git_EAGLE OpenModelProfile] xModel	
		New Go Into	*
		Copy Paste	Ctrl+C Ctrl+V
	×	Delete	Delete
	2	Remove from Context Ctrl+Alt+Shif	t+ Down
Delete project	t con	rou want to remove project 'XxxModel' from the tents on disk (cannot be undone)	

Figure 5.6-1: Delete a Project

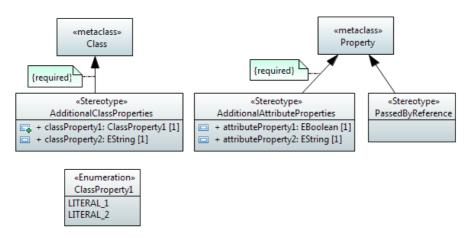
6 Using Papyrus

6.1 Illustrative Profile and Model

This guideline document uses an illustrative UML[®] profile, as shown in figure 6.1-1, and an illustrative core-model, as shown in figure 6.1-2, and sub-model to explain the handling of Papyrus.

UML[®] artefacts are defined by their properties (i.e. a kind of Meta Model). Standard properties are defined by the UML[®] Specification [i.3] which are usually already supported by the UML[®] tool (e.g. Papyrus). Additional specific properties are defined in a UML[®] Profile (model).

The UML® Guidelines document ETSI GR NFV-IFA 017 [i.5] describes the additional properties in detail.



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Figure 6.1-1: Illustrative UML® Profile

The AdditionalClassProperties stereotype adds properties classProperty1 and classProperty2 to the object classes in the model. The extension relationship has been defined as "required" which adds the additional properties to all object classes; i.e. for every class created, the AdditionalClassProperties stereotype will be present by default.

The AdditionalAttributeProperties stereotype adds properties attributeProperty1 and attributeProperty2 to the attributes in the model. The extension relationship has been defined as "required", which adds the additional properties to all attributes; i.e. for every attribute created, the AdditionalAttributeProperties stereotype will be present by default.

The PassedByReference stereotype identifies an attribute or an operation parameter being passed by value or passed by reference. The extension relationship has not been defined as "required", which means that the stereotype has to be associated to the attribute on a case by case basis.

NOTE: Only those attributes and operation parameters that refer to object classes may have the PassedByReference stereotype.

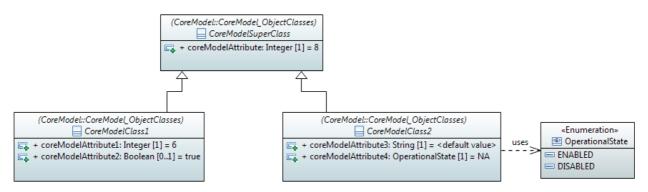
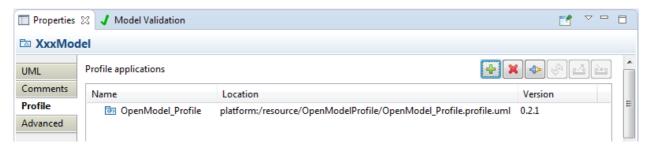


Figure 6.1-2: Illustrative Core Model

The initial core model contains a super-class and two sub-classes.

The profile from figure 6.1-1 is associated to the model. This adds the additional properties to the artefacts in the model or allows their use in the model respectively.

It is possible to check if a profile is associated to the model (and which one) by clicking on $\square XxxModel$ inside the $\square Properties X$ view as shown in figure 6.1-3.



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Figure 6.1-3: Profile Associated to the Model

6.2 Papyrus file structure

A Papyrus model is stored in three different files (.di, .notation, .uml) as show in figure 6.2-1.

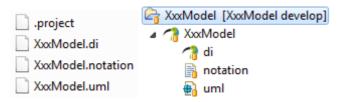


Figure 6.2-1: Papyrus file structure (left: file structure, right: papyrus project structure)

A model cannot exist on its own in Papyrus. It can only be contained by a "project". A project can contain many models. The .project file contains the information about the project.

6.3 Submitting a modified model

Modified models should be submitted as contribution for the corresponding model project (i.e. ETSI GR NFV-IFA 015 [i.7] or ETSI GR NFV-IFA 024 [i.8]).

The model needs to be provided as a zip file, containing both model and profile files.

Select the project in the Project Explorer area and right-click to open the menu containing the Export button and select Archive File under the General folder as show in figure 6.3-1.

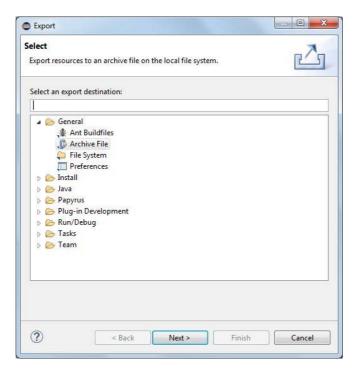


Figure 6.3-1: Exporting a model (1)

Select the model project and the profile project. In the model project, do not select the doc sub-folder and fill the archive name as show in figure 6.3-2.

rchive file Export resources to an archive file on the loca	al file system.
 Image: Constraint of the second second	Image: Image
o archive file: NEVIFA(17)000xxx_NfvInform	nationModelv213.zip
o archive file: NFVIFA(17)000xxx_NfvInforr	
© archive file: <u>NFVIFA(17)000xxx_NfvInforr</u> Options © Save in zip format	mationModelv213.zip Browse
© archive file: NFVIFA(17)000xxx, NfvInform Options © Save in zip format © Save in tar format © Compress the contents of the file	Oreate directory structure for files
© archive file: NFVIFA(17)000xxx_NfvInform Options © Save in zip format © Save in tar format	Oreate directory structure for files
To archive file: NFVIFA(17)000xxx, NfvInform Options	Oreate directory structure for files

Figure 6.3-2: Exporting a model (2)

The resulting zip file contains the model and should be included in the contribution.

6.4 Generating model documentation

Gendoc [i.6] is an Eclipse[™] plug-in integrated with Papyrus that allows generating MS Word[®] documentation of a model from a template. The template is stored in a system folder accessible via an Eclipse[™] project so that the template can be seen in the Papyrus Project Explorer.

For the ETSI NFV Information Model, a specific Gendoc template gdNfvTemplate.docx allows generating MS Word[®] documentation for the complete NFV Information Model.

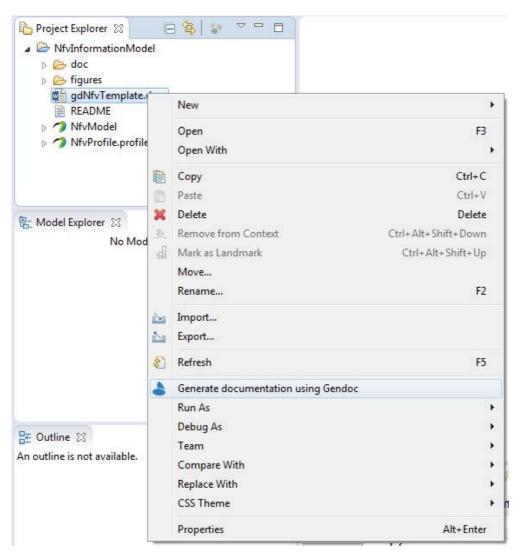


Figure 6.4-1: Generating Gendoc documentation

To generate documentation, right-click on the gdNfvTemplate.docx file and select the menu "Generate documentation using Gendoc" as shown in figure 6.4-1.

The resulting file is in the doc sub-folder of the project and is named NfvInformationModel-vxxx.docx by default.

The name of the model file is assumed to be NfvModel and the version by default is the current NFV Information Model version. These 2 information items are defined as parameters in Gendoc. To change one of those 2 information, the gdNfvTemplate.docx file can be edited as shown in figure 6.4-2.

All the text in red is comments and won't appear in the output. Do not remove the drop EOL.	<drop></drop>
2 variables are needed:	<drop></drop>
 model_name; only change the default if you rename the papyrus model file 	<drop></drop>
 model_version: align if needed to the current version 	<drop></drop>
Only change text in brown below.	<drop></drop>
By default, the generated documentation will be stored in the doc folder in the project directory to store	the generated
documentation.	<drop></drop>
Note that none of the red text in this document will appear in the output	<drop></drop>
Note that commands that do not result in text being printed are highlighted in purple. Text and comma	ands that cause
print are in black	<drop></drop>
<drop></drop>	
<config></config>	
<pre>cparam key='model_name' value==' NfvModel.uml'/></pre>	
<pre><pre>content key='model_version' value==' v002 /></pre></pre>	
<output path="\${project_loc}/doc/NfvInformationModel-\${model_version}.docx"></output>	
<u config>	

Figure 6.4-2: Gendoc template parameters

Only change the text in brown. Do not touch the rest of the template.

As the doc sub-folder of the project already contained the NfvInformationModel-vxxx.docx corresponding to the current released draft that is provided as part of the kit, it is recommended, when generating documentation for a contribution, to suffix the version (v002 in the example above) with a suffix for instance the contribution number (for example, v002-xyz). This would allow the doc folder to contain 2 files:

- NfvInformationModel-vxxx.docx, containing the Gendoc of the current released draft.
- NfvInformationModel-vxxx-xyz.docx, containing the Gendoc that includes the changes from this contribution.

Doing a word compare between those 2 files generates the Gendoc file with change bars needed for a contribution. This Gendoc file should also be included in the contribution.

6.5 Using Class Diagrams

In the general UML[®] definition a class may have name, attribute and operation compartments, but as the operation compartment is not used, it should always be hidden.

If attributes are defined, the attributes compartment can be set in a given diagram to not expose the attributes or to expose some or all of the attributes.

The recommendation is to avoid exposing attributes if they are defined, so as to reduce clutter.

However, in some cases, only a subset of the attributes defined can be exposed so as to focus attention.

To hide compartments, right-click on the object class, select Filter and then Show/Hide Compartments as shown in figure 6.5-1.

Ī	Network	Servio		📄 Comment
<u> </u>		× 2 7	Navigate File Load resource Enable write Delete Selected Element Hide Selected Element Format	Delete Shift+Delete
Show/Hide Contents	F4	0	Filters	۰ n
Show/Hide Compartments	Ctrl+F5	1	Validation	+ ا
Show/Hide Related Link		1	Edit	ب ا
Show Related Link In Selection			OCL	۰ د
Sort/Filter Compartments Items			Show Properties View	
All Connector Labels No Connector Labels		Q.	Remove from Context	Ctrl+Alt+Shift+Down
	Show/Hide Compartments Show/Hide Related Link Show Related Link In Selection Show All Related Link Sort/Filter Compartments Items All Connector Labels	Show/Hide Contents F4 Show/Hide Compartments Ctrl+F5 Show/Hide Related Link Show/Hide Related Link Show Related Link In Selection Show All Related Link Show All Related Link Sort/Filter Compartments Items All Connector Labels No Connector Labels	Show/Hide Contents F4 Show/Hide Compartments Ctrl+F5 Show/Hide Related Link Show Related Link Show Related Link In Selection Show All Related Link Sort/Filter Compartments Items All Connector Labels	File Load resource Fiale Load resource Enable write Enable write Show/Hide Contents F4 Show/Hide Compartments Ctrl+F5 Show/Hide Related Link Validation Show Related Link Edit Show All Related Link Ctrl+F5 Show Properties View Properties Show Properties View Properties All Connector Labels Remove from Context

Figure 6.5-1: Hiding compartments (1)

Uncheck all checkboxes in the compartment column as show in figure 6.5-2.

ompartments To Display	<i>i</i>	Display Compartment Title	
Class> Netwo		and the second sec	
attributes	ik service		
operations			
nested class	ifiers		
symbol			
		1 - 0	
	Select All De	eselect All Propagate selection to ele	ements of same ty

Figure 6.5-2: Hiding compartments (2)

6.6 Applying a stereotype to an element

Each element in UML[®] can have one or more stereotypes assigned to it. For the NfvModel three stereotypes are used: <<OpenModelClass>>, <<OpenModelAttribute>>, <<OpenModelNotification>> as well as a set of lifecycle related stereotypes.

By default if an element of type Class, Property or Signal is created, the corresponding stereotype <<<OpenModelClass>> or <<OpenModelAttribute>> or <<OpenModelNotification>> is applied respectively.

The lifecycle related attributes have to be added manually. To add a stereotype go to the Property view of the element and select the Profile tab as shown in figure 6.6-1.

27

Properties	🔀 🤳 Model Validation 🛛 📋 History
📄 «OpenN	ModelClass» Class1
UML	Applied stereotypes:
Comments	🖅 🖽 OpenModelClass (from OpenModelNfv_Profile)
Profile	
Advanced	

Figure 6.6-1: Class properties - Profile

Click on the 4 icon to apply a new stereotype. Select the applicable stereotype and apply it by a click on 4 as shown in figure 6.6-2.

(⊜			×
Applicable Stereotypes:		Applied Stereotypes:	
Stereotype Choice Choice Example Experimental SF Faulty CF Ukely ToChange CF Obsolete CF Preliminary	Information OpenModelNfv_Profile::Choice OpenModelNfv_Profile::Example OpenModelNfv_Profile::Experimen OpenModelNfv_Profile::Faulty OpenModelNfv_Profile::Disolete OpenModelNfv_Profile::Preliminary	CpenModelClass	v v
			OK Cancel

Figure 6.6-2: Stereotype selection

Click Ok and the stereotype shows up in the "Applied stereotypes:" box.

New artefacts should have the Experimental stereotype.

ETSI

6.7 Changing the value of a stereotype attribute

To change the parameter of an applied stereotype, go to the Property view of the element and select the Profile tab. Click the "+" in front of the stereotype for which a value of an attribute needs to be changed. A field to specify the value appears to the right of the "Applied stereotypes:" as shown in figure 6.7-1.

•

Figure 6.7-1: Modify stereotype attribute

Annex A: Authors & contributors

The following people have contributed to the present document:

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History

	Document history		
V2.1.1	March 2017	Publication	
V2.4.1	February 2018	Publication	
V2.5.1	August 2018	Publication	