



Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Report on NFV Information Model

Disclaimer

The present document has been produced and approved by the Network Functions Virtualisation (NFV) ETSI Industry Specification Group (ISG) and represents the views of those members who participated in this ISG. It does not necessarily represent the views of the entire ETSI membership.

Reference

RGR/NFV-IFA015ed212

Keywordsinformation model, interface, management,
MANO, NFV, orchestration**ETSI**

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important noticeThe present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at
<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2017.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	5
3 Definitions and abbreviations.....	6
3.1 Definitions	6
3.2 Abbreviations	6
4 Overview	6
4.1 Introduction	6
4.2 Relation to other ETSI NFV ISG Group Specifications.....	6
5 About the NFV Information Model.....	7
5.1 Model structure	7
5.2 Model views	7
5.2.1 Introduction.....	7
5.2.2 Logical view	8
5.2.3 Deployment view.....	8
5.2.4 Application view.....	9
5.3 Model details.....	10
Annex A: NFV Information model.....	11
Annex B: Word format presentation of the NFV Information model	12
Annex C: Authors & contributors.....	13
History	14

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

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 [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document is an informative document providing a NFV Information Model consolidating information elements from the ETSI NFV IFA specifications listed in the reference section.

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] ETSI GS NFV 003: "Network Functions Virtualisation (NFV); Terminology for Main Concepts in NFV".

[i.2] Papyrus Eclipse™ UML® Modeling Tool.

NOTE 1: Available at <https://www.eclipse.org/papyrus/>.

NOTE 2: Eclipse™ is a trademark of Eclipse Foundation, Inc.

[i.3] OMG™ Unified Modeling Language™ (UML®) specifications 2.5.0.

NOTE 1: Available at <http://www.omg.org/spec/UML/>.

NOTE 2: UML® is a registered trademark of the Object Management Group, Inc.

NOTE 3: OMG™ and Unified Modeling Language™ are trademarks of the Object Management Group.

[i.4] Eclipse Gendoc tool.

NOTE: Available at <http://www.eclipse.org/gendoc/>.

[i.5] ETSI GS NFV-IFA 005: "Network Functions Virtualisation (NFV); Management and Orchestration; Or-Vi reference point - Interface and Information Model Specification".

[i.6] ETSI GS NFV-IFA 006: "Network Functions Virtualisation (NFV); Management and Orchestration; Vi-Vnfm reference point - Interface and Information Model Specification".

[i.7] ETSI GS NFV-IFA 007: "Network Functions Virtualisation (NFV); Management and Orchestration; Or-Vnfm reference point - Interface and Information Model Specification".

[i.8] ETSI GS NFV-IFA 008: "Network Functions Virtualisation (NFV); Management and Orchestration; Ve-Vnfm reference point - Interface and Information Model Specification".

[i.9] ETSI GS NFV-IFA 011: "Network Functions Virtualisation (NFV); Management and Orchestration; VNF Packaging Specification".

[i.10] ETSI GS NFV-IFA 013: "Network Functions Virtualisation (NFV); Management and Orchestration; Os-Ma-Nfvo reference point - Interface and Information Model Specification".

[i.11] ETSI GS NFV-IFA 014: "Network Functions Virtualisation (NFV); Management and Orchestration; Network Service Templates Specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [i.1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in [i.1] apply.

4 Overview

4.1 Introduction

The NFV Information Model builds upon the information elements developed in other ETSI NFV ISG specifications and translates them into a consolidated UML® [i.3] NFV Information Model. The intention of the information model is to provide a consolidated view on all information elements present as part of the interface specifications. The model is a tool to check consistency between information elements as well as to provide a logical relationship between information elements across different interfaces by the use of UML® associations.

The model is structured into domains and modules to differentiate between different types of information elements and their use. Whereas the Core Model provides generic information elements which are applicable to multiple interfaces, the Interface Information Model provides interface specific information elements.

NOTE: The term Core Model is used within the scope of the present document and is not related to the term Core Model used outside of the ISG.

In case of discrepancies between the present document and information elements specified in the documents in clause 4.2, the latter are considered as the reference.

The format of the model will be UML® [i.3], using the Papyrus Open Source format [i.2].

4.2 Relation to other ETSI NFV ISG Group Specifications

The present document is referencing information from the following NFV Group Specifications:

- NS Templates information elements, produced by ETSI GS NFV-IFA 014 [i.11];
- VNF Descriptor information elements produced by ETSI GS NFV-IFA 011 [i.9];
- Information elements produced by ETSI GS NFV-IFA 005 [i.5], ETSI GS NFV-IFA 006 [i.6], ETSI GS NFV-IFA 007 [i.7], ETSI GS NFV-IFA 008 [i.8] and ETSI GS NFV-IFA 013 [i.10].

5 About the NFV Information Model

5.1 Model structure

The NFV Information Model, as shown in figure 1, is organized in an NFV Core Model and extensions, extending the NFV Core Model for specific needs.

One extension, NFV Interface Information Model, is currently defined for containing information elements specific to interfaces.

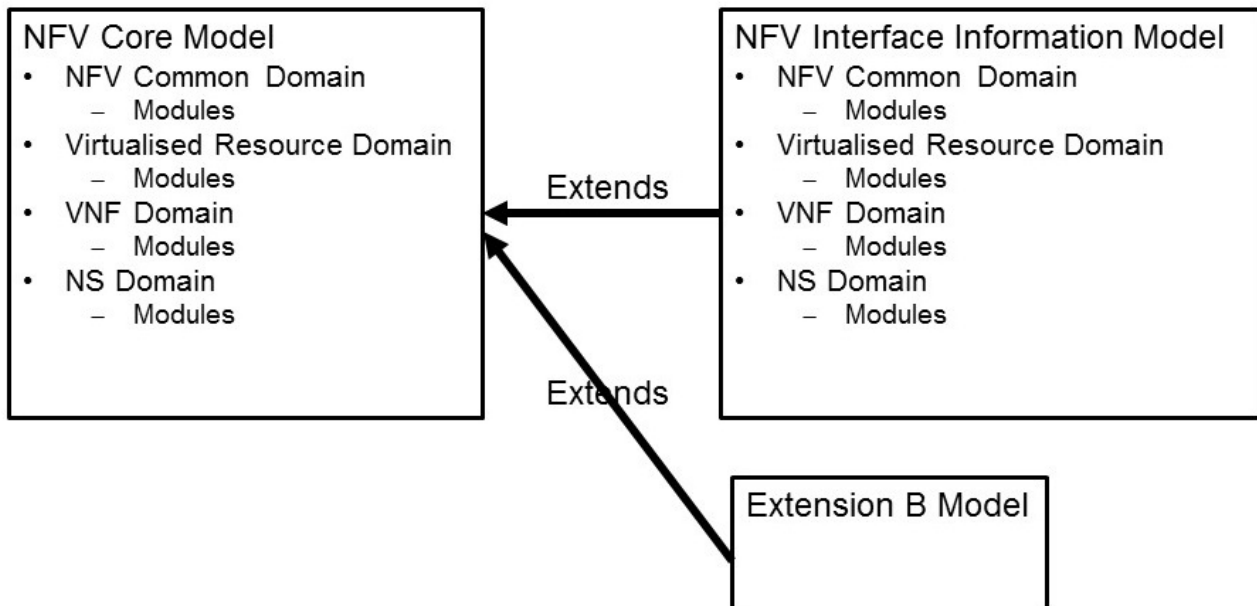


Figure 1: NFV Information Model structure

Each model is structured in Domains. Four domains are defined today:

- NFV Common Domain
- Virtualised Resource Domain
- VNF Domain
- NS Domain

Each domain is structured in modules.

5.2 Model views

5.2.1 Introduction

The NFV Information Model includes 3 types of view:

- Logical view
- Deployment view
- Application view

5.2.2 Logical view

The logical view is concerned with the functionality that the system provides to end-users.

Most of the classes in the model belong to the logical view.

To facilitate recognition, all elements that are part of the logical view are coloured in light blue in the diagrams.

Figure 2 is showing a very basic example of a VNF logical view.

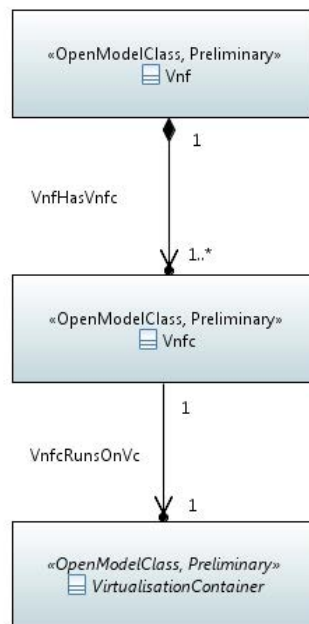


Figure 2: Basic example of a VNF logical view

5.2.3 Deployment view

The deployment view is concerned with the functionality that is needed to deploy the provided system to end-users.

All the descriptor classes are part of the deployment view.

To facilitate recognition, all elements that are part of the deployment view are coloured in yellow in the diagrams.

Figure 3 is showing a very basic example of a VNF deployment view.

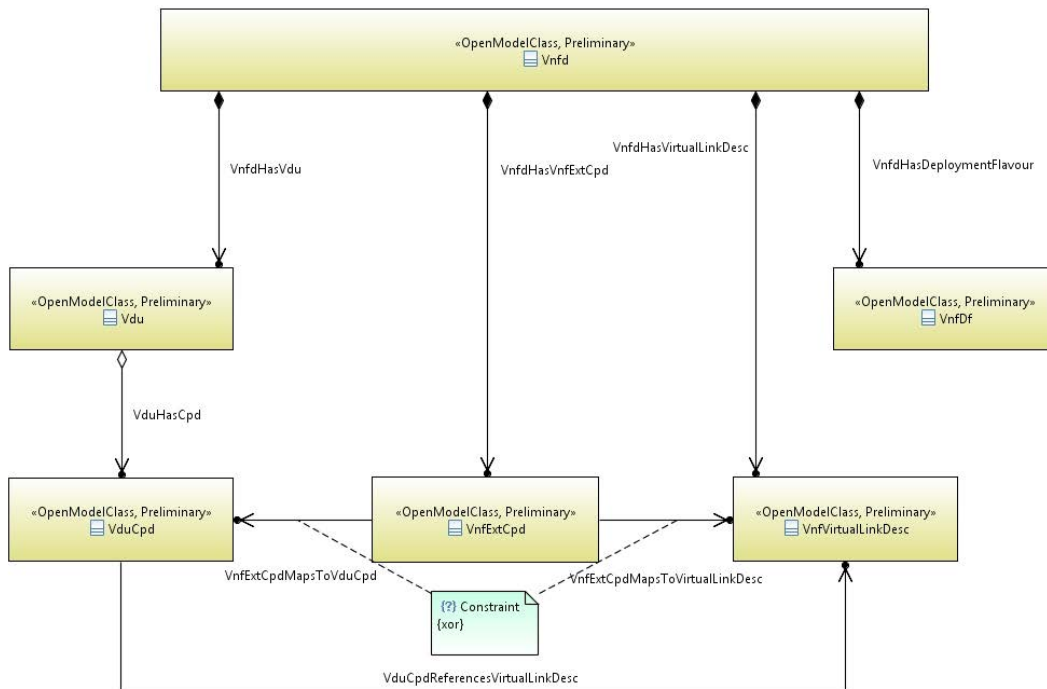


Figure 3: Basic example of a VNF deployment view

As the elements in the deployment view are used to deploy elements in the logical view, corresponding elements are related as shown in the example of a relationship between logical and deployment views in the figure 4.

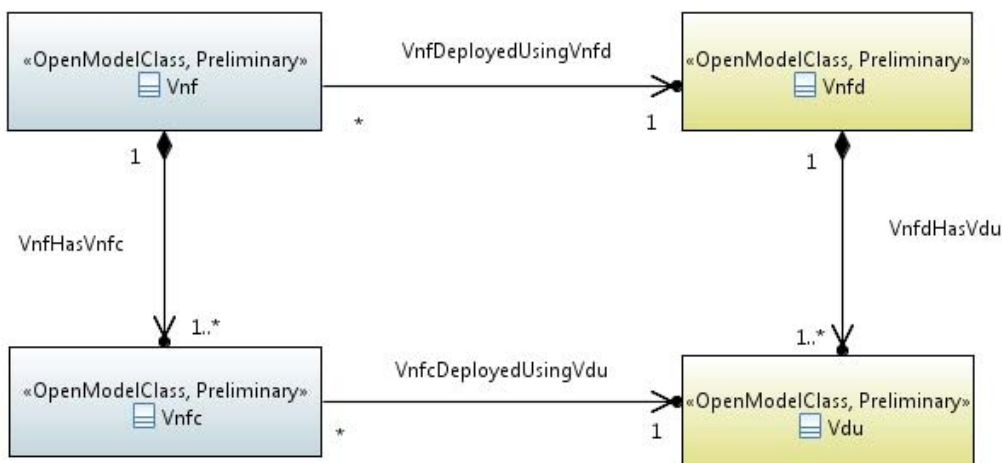


Figure 4: Example of a relationship between logical and deployment views

5.2.4 Application view

The application view is concerned with the functionality that the application provides to end-users.

To ease integration with other information models, relationship between key elements in the logical view and some application elements are present in the NFV Information Model. These application elements, in limited number, are out of ETSI NFV scope and are just present as empty classes.

To facilitate recognition, all elements that are part of the application view are coloured in purple in the diagrams.

The figure 5 is showing an example of a relationship between logical and applications views.

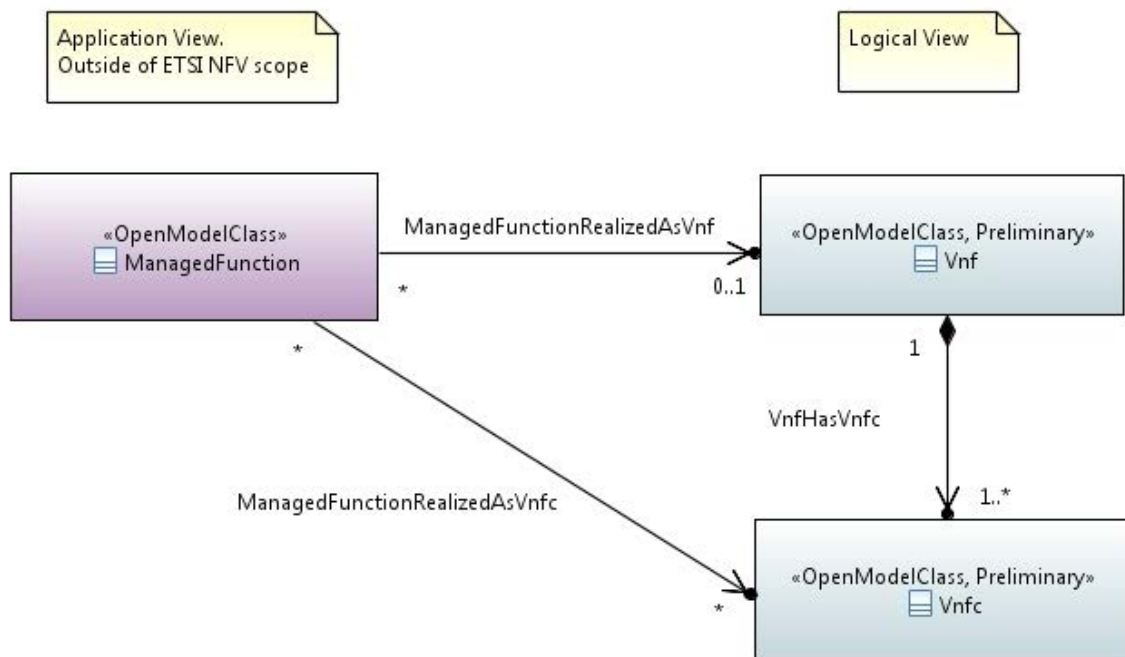


Figure 5: Example of a relationship between logical and application views

5.3 Model details

The model details are provided in Papyrus [i.2] format in the attached zip file which accompanies the present document.

The Gendoc plugin [i.4] is used to generate a Microsoft® Word output of the NFV Information Model.

The model is decomposed based on the model structure presented in clause 5.1 and, for each module, the following elements are listed in order:

- Diagrams
- Classes
- Notifications
- Datatypes
- Associations

For each element, the comments and the stereotypes are shown. For classes, notifications, and datatypes, the attributes are displayed in tables. For associations, the association ends, whether the association is navigable or not, are shown in tables.

Annex A: NFV Information model

The NFV Information model built using the Papyrus UML® tool [i.2] is contained in a compressed file named NfvInformationModelv212.zip contained in archive gr_nfv-ifa015v020102p0.zip which accompanies the present document.

Annex B:

Word format presentation of the NFV Information model

The Microsoft® Word format presentation of the NFV Information model is generated from the NFV UML® Information model using the tool Gendoc available at [i.4]. The format is provided to assist the reader that do not use UML® or have no access to UML® tools.

The Microsoft® Word format presentation of the NFV Information model is a file NfvInformationModelv212.docx contained in compressed archive gr_nfv-ifa015v020102p0.zip which accompanies the present document.

Annex C: Authors & contributors

The following people have contributed to the present document:

Rapporteur:

Marc Flauw, Hewlett-Packard Enterprise

Peter Wörndle, Ericsson

Other contributors:

Dmytro Gassanov, NetCracker

Ashiq Khan, DOCOMO Communications Lab
Gerald Kunzmann, DOCOMO Communications Lab

Ryosuke Kurebayashi, DOCOMO Communications Lab

Gyula Bodog, Nokia Networks

Kazuaki Obana, DOCOMO Communications Lab

Uwe Rauschenbach, Nokia Networks

Bertrand Souville, DOCOMO Communications Lab

Joan Triay, DOCOMO Communications Lab

Amanda Xiang, Huawei

Zhou Yan, Huawei

History

Document history		
V2.1.1	January 2017	Publication
V2.1.2	January 2017	Publication