



Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Report on NFV Information Model

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Reference

RGR/NFV-IFA015ed341

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

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

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1 Scope

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

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 Descriptor and 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".
- [i.12] ETSI GS NFV-IFA 030: "Network Functions Virtualisation (NFV); Management and Orchestration; Multiple Administrative Domain Aspect Interfaces Specification Network Service Templates Specification".
- [i.13] ETSI GS NFV-IFA 031: "Network Functions Virtualisation (NFV); Management and Orchestration; Requirements and interfaces specification for management of NFV-MANO".
- [i.14] ETSI GS NFV-IFA 032: "Network Functions Virtualisation (NFV); Management and Orchestration; Interface and Information Model Specification for Multi-Site Connectivity Services".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI GS NFV 003 [i.1] apply.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI GS NFV 003 [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 NFV 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], ETSI GS NFV-IFA 013 [i.10], ETSI GS NFV-IFA 030 [i.12], ETSI GS NFV-IFA 031 [i.13] and ETSI GS NFV-IFA 032 [i.14].

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.

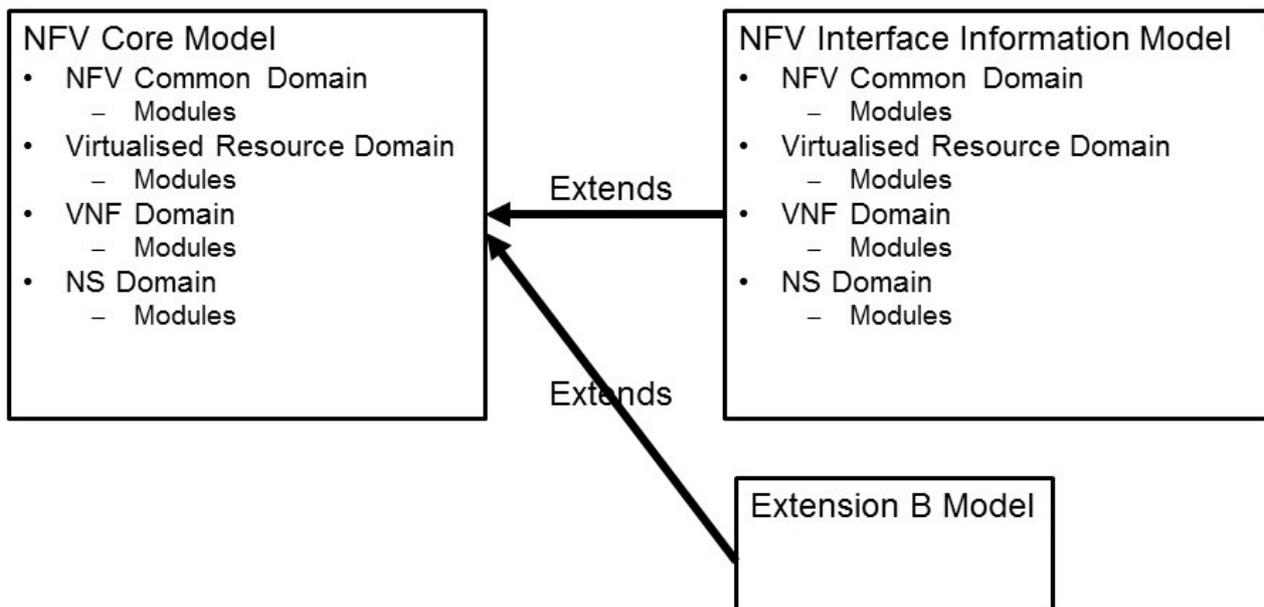


Figure 1: NFV Information Model structure

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 2 types of view:

- Logical view.
- Deployment 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.

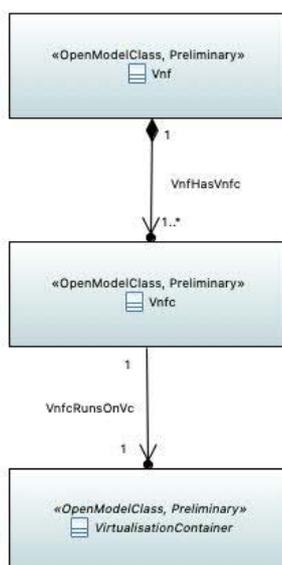


Figure 2: Basic example of a VNF logical view

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.

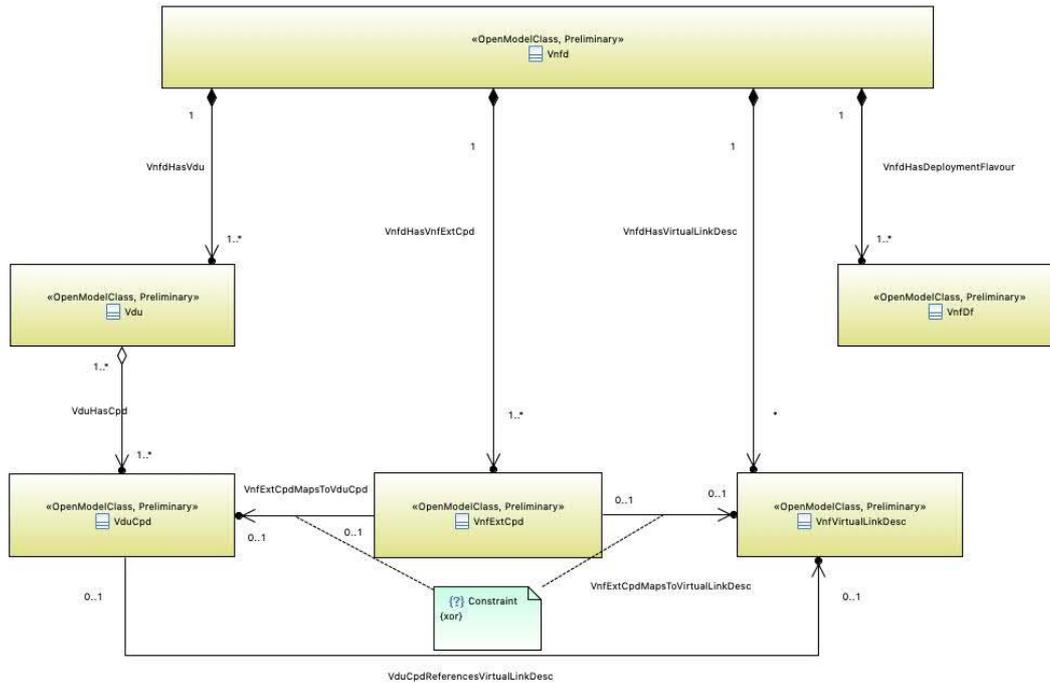


Figure 3: Basic example of a VNF deployment view

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 figure 4.

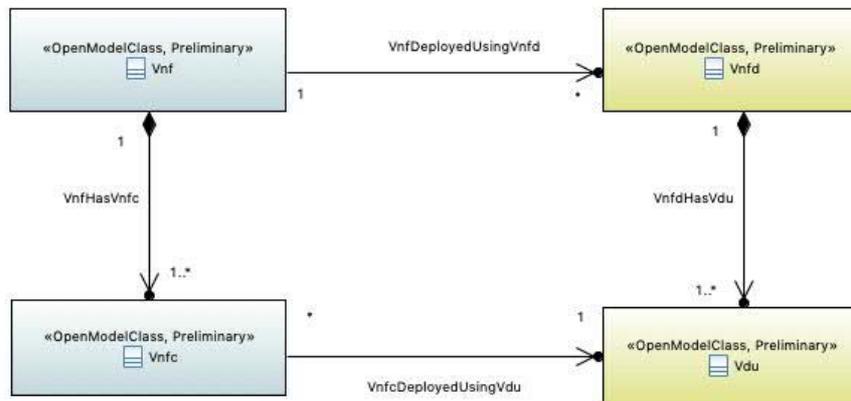


Figure 4: Example of a relationship between logical and deployment views

5.3 Model details

The model details are provided in Papyrus [i.2] format in the attached zip file (gr_nfv-ifa015v030401p0.zip) 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 NfvInformationModelv341.zip contained in archive gr_nfv-ifa015v030401p0.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 readers that do not use UML® or have no access to UML® tools.

The Microsoft® Word format presentation of the NFV Information Model is the file NfvInformationModelv341.docx contained in archive gr_nfv-ifa015v030401p0.zip which accompanies the present document.

Annex C: Known misalignments

A list of known misalignments identified during the alignment of the NFV Information Model with the ETSI NFV ISG specifications the Information Model is based on is captured in Annex A in the document 'Known Misalignments v341.xlsx' available in archive gr_nfv-ifa015v030401p0.zip. The known misalignments are due to intentional or unresolved differences between the published NFV ed341 specifications and the present document. The misalignments may be removed or confirmed as intentional in future versions of the specifications and Information Model. The misalignments are organized by reference document and clause.

Annex D: Disambiguation of Model Elements

Some information elements have identical names, even as there are substantial differences in their description, content, and use. While these information elements are located in different packages in the NFV Information Model and are distinguishable based on their qualified names, it is difficult to keep track where an information element described in a particular document is to be found in the NFV Information Model and vice-versa. An unambiguous mapping between the information elements described in the base documents and the corresponding elements described in the NFV Information Model is provided in table D.1. A machine-readable version of this annex is included in Annex A in the document 'DuplicateElementMapping.csv' available in archive gr_nfv-ifa015v030401p0.zip, which includes all potential matches and a separate column indicating which information elements and which model elements actually match.

Table D.1: Mapping between information elements and model elements

Base Document	Information Element	Qualified Name in NFV Information Model
ETSI GS NFV-IFA 005 [i.5]	VirtualCpuData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualCpuData
ETSI GS NFV-IFA 005 [i.5]	VirtualCpuPinningData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualCpuPinningData
ETSI GS NFV-IFA 005 [i.5]	VirtualMemoryData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualMemoryData
ETSI GS NFV-IFA 006 [i.6]	VirtualCpuData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualCpuData
ETSI GS NFV-IFA 006 [i.6]	VirtualCpuPinningData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualCpuPinningData
ETSI GS NFV-IFA 006 [i.6]	VirtualMemoryData	NfvInformationModel::NFVInterfaceInformationModel::ResourceDomain::VirtualisedResourceModule::VirtualMemoryData
ETSI GS NFV-IFA 007 [i.7]	AffectedVirtualLink	NfvInformationModel::NFVInterfaceInformationModel::VirtualNetworkFunctionDomain::VnfLcmModule::AffectedVirtualLink
ETSI GS NFV-IFA 007 [i.7]	ScaleInfo	NfvInformationModel::NFVInterfaceInformationModel::VirtualNetworkFunctionDomain::VnfLcmModule::ScaleInfo
ETSI GS NFV-IFA 008 [i.8]	AffectedVirtualLink	NfvInformationModel::NFVInterfaceInformationModel::VirtualNetworkFunctionDomain::VnfLcmModule::AffectedVirtualLink
ETSI GS NFV-IFA 008 [i.8]	ScaleInfo	NfvInformationModel::NFVInterfaceInformationModel::VirtualNetworkFunctionDomain::VnfLcmModule::ScaleInfo
ETSI GS NFV-IFA 011 [i.9]	LifeCycleManagementScript	NfvInformationModel::NFVCoreModel::VirtualNetworkFunctionDomain::VnfTemplateModule::LifeCycleManagementScript
ETSI GS NFV-IFA 011 [i.9]	ScaleInfo	NfvInformationModel::NFVCoreModel::NFVCommonDomain::CommonTemplateModule::ScaleInfo
ETSI GS NFV-IFA 011 [i.9]	VirtualCpuData	NfvInformationModel::NFVCoreModel::VirtualNetworkFunctionDomain::VnfTemplateModule::VirtualCpuData
ETSI GS NFV-IFA 011 [i.9]	VirtualCpuPinningData	NfvInformationModel::NFVCoreModel::VirtualNetworkFunctionDomain::VnfTemplateModule::VirtualCpuPinningData
ETSI GS NFV-IFA 011 [i.9]	VirtualLinkProfile	NfvInformationModel::NFVCoreModel::VirtualNetworkFunctionDomain::VnfTemplateModule::VirtualLinkProfile
ETSI GS NFV-IFA 011 [i.9]	VirtualMemoryData	NfvInformationModel::NFVCoreModel::VirtualNetworkFunctionDomain::VnfTemplateModule::VirtualMemoryData
ETSI GS NFV-IFA 013 [i.10]	AffectedVirtualLink	NfvInformationModel::NFVInterfaceInformationModel::NsDomain::NsLifecycleChangeNotificationModule::AffectedVirtualLink
ETSI GS NFV-IFA 013 [i.10]	ScaleInfo	NfvInformationModel::NFVCoreModel::NFVCommonDomain::CommonTemplateModule::ScaleInfo
ETSI GS NFV-IFA 014 [i.11]	LifeCycleManagementScript	NfvInformationModel::NFVCoreModel::NsDomain::NsTemplateModule::LifeCycleManagementScript
ETSI GS NFV-IFA 014 [i.11]	VirtualLinkProfile	NfvInformationModel::NFVCoreModel::NsDomain::NsTemplateModule::VirtualLinkProfile

History

Document history		
V3.1.1	September 2018	Publication
V3.3.1	February 2020	Publication
V3.4.1	June 2020	Publication