ETSI GR NFV-TST 007 V2.5.1 (2018-08)

GROUP REPORT

Network Functions Virtualisation (NFV) Release 2;
Testing;
Guidelines on Interoperability Testing for MANO

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 notice

The 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

ETSI

Contents

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables 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.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

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 describes a set of informative interoperability test guidelines for NFV capabilities that require interactions between the components implementing NFV functionality, namely, the NFVO, VNFM, EM-VNF and VIM-NFVI (Functions under Test).

The guidelines in the present document follow the interoperability testing methodology described in ETSI GS NFV-TST 002 [i.1] and are implementation agnostic. The capabilities in scope are enabled by the interfaces on the main NFV reference points between the Functions Under Test:

- Or-Vi;

- Or-Vnfm;

- Vi-Vnfm; and

- Ve-Vnfm.

# 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-TST 002 (V1.1.1): "Network Functions Virtualisation (NFV); Testing Methodology; Report on NFV Interoperability Testing Methodology".

[i.2]	ETSI GS NFV 003 (V1.2.1): "Network Functions Virtualisation (NFV); Terminology for Main Concepts in NFV".

[i.3]	ETSI GS NFV-IFA 005 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Or-Vi reference point - Interface and Information Model Specification".

[i.4]	ETSI GS NFV-IFA 006 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Vi-Vnfm reference point - Interface and Information Model Specification".

[i.5]	ETSI GS NFV-IFA 007 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Or-Vnfm reference point - Interface and Information Model Specification".

[i.6]	ETSI GS NFV-IFA 008 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Ve-Vnfm reference point - Interface and Information Model Specification".

[i.7]	ETSI GS NFV-IFA 010 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Functional requirements specification".

[i.8]   ETSI GS NFV-IFA 011 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; VNF Packaging Specification".

[i.9]   ETSI GS NFV-IFA 013 (V2.3.1): "Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Os-Ma-Nfvo reference point - Interface and Information Model Specification".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the terms and definitions given in ETSI GS NFV 003 [i.2] apply.

NOTE: A term defined in the present document takes precedence over the definition of the same term, if any, in ETSI GS NFV 003 [i.2].

3.2   Abbreviations

For the purposes of the present document, the abbreviations given in ETSI GS NFV 003 [i.2] and the following apply:

NOTE: An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in ETSI GS NFV 003 [i.2].

CRM	Compute Resource Management
DF	Deployment Flavour
EM	Element Manager
FM	Fault Management
IFS	Interoperability Features Statement
KPI	Key Performance Indicators
MANO	Management and Orchestration
NFV	Network Function Virtualisation
NFVI	NFV Infrastructure
NFVO	NFV Orchestrator
NIC	Network Interface Controller
NS	Network Service
NSD	NS Descriptor
NRM	Network Resource Management
PM	Performance Management
SRM	Storage Resource Management
SUT	System Under Test
VIM	Virtual Infrastructure Manager
VL	Virtual Link
VLD	VL Descriptor
VM	Virtual Machine
VNF	Virtual Network Functions
VNFC	VNF Component
VNFD	VNF Descriptor
VNFFG	VNF Forwarding Graph
VNFFGD	VNFFG Descriptor
VNFM	VNF Manager
VR	Virtual Resource

4 Interoperability Features Statement (IFS)

4.1 Introduction

This clause compiles the Interoperability Feature Statement (IFS) for VIM, VNFM, EM/VNF and NFVO according to clause 4.3.3 of ETSI GS NFV-TST 002 [i.1] and following the example in ETSI GS NFV-TST 002 [i.1], annex A.

The interoperability feature statement identifier starts with a reference to the relevant functional block that produces or consumes the interface:

- IDs starting with "VIM_" designate features on interfaces produced or consumed by the VIM

- IDs starting with "VNFM_" designate features on interfaces produced or consumed by the VNFM

- IDs starting with "NFVO_" designate features on interfaces produced or consumed by the NFVO

- IDs starting with "EM_" designate features on interfaces produced or consumed by the EM/VNF

The purpose of the Interoperable Features Statement (IFS) is to identify those standardized functions which a FUT supports, including those which are optional and those which are conditional on the support of other functions. Supported interoperability feature statements should be indicated by Y in the Support column (or N if not supported). The Details column can be used to add further support details when necessary.

4.2 IFS for VIM

4.2.1 Software Image Management

Table 4.2.1-1

Functional Block	VIM			
Functional Area	Software Image Management			
Observed Reference Point	Or-Vi			
Observed Interface	Software Image Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_SWIM_QUERY_IM_BY_NFVO	VIM supports software image information queries by the NFVO	M		
VIM_SWIM_ADD_IM	VIM supports "add image" operations by the NFVO	M		
VIM_SWIM_UPDATE_IM	VIM supports "update image" operations by the NFVO	M		
VIM_SWIM_DELETE_IM	VIM supports "delete image" operations by the NFVO	M		

Table 4.2.1-2

Functional Block	VIM			
Functional Area	Software Image Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Software Image Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_SWIM_QUERY_IM_BY_VNFM	VIM supports software image information queries by the VNFM	M		

4.2.2 VNF Package Management

No IFS needed for VNF Package Management on the VIM.

4.2.3 VNF Lifecycle Management

Table 4.2.3-1

Functional Block	VIM			
Functional Area	VNF Lifecycle Management			
Observed Reference Point	Or-Vi			
Observed Interface	Virtualised Compute Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_CRM_ALLOCATE_BY_NFVO	VIM supports "allocate compute resource" operation requests from the NFVO	M		
VIM_CRM_INFO_TO_NFVO	VIM can send compute resource information to the NFVO	M		
VIM_CRM_OPERATE_BY_NFVO	VIM supports "operate compute resource" operation requests from the NFVO	M		
VIM_CRM_TERMINATE_BY_NFVO	VIM supports "terminate compute resource" operation requests from the NFVO	M		

Table 4.2.3-2

Functional Block	VIM			
Functional Area	VNF Lifecycle Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Virtualised Compute Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_CRM_ALLOCATE_BY_VNFM	VIM supports "allocate compute resource" operation requests from the VNFM	M		
VIM_CRM_INFO_TO_VNFM	VIM can send compute resource information to the VNFM	M		
VIM_CRM_OPERATE_BY_VNFM	VIM supports "operate compute resource" operation requests from the VNFM	M		
VIM_CRM_TERMINATE_BY_VNFM	VIM supports "terminate compute resource" operation requests from the VNFM	M		

Table 4.2.3-3

Functional Block	VIM			
Functional Area	VNF Lifecycle Management			
Observed Reference Point	Or-Vi			
Observed Interface	Virtualised Network Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_NRM_ALLOCATE_BY_NFVO	VIM supports "allocate network resource" operation requests from the NFVO	M		
VIM_NRM_INFO_TO_NFVO	VIM can send network resource information to the NFVO	M		
VIM_NRM_TERMINATE_BY_NFVO	VIM supports "terminate network resource" operation requests from the NFVO	M		

Table 4.2.3-4

Functional Block	VIM			
Functional Area	Network Resource Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Virtualised Network Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_NRM_ALLOCATE_BY_VNFM	VIM supports "allocate network resource" operation requests from the VNFM	M		
VIM_NRM_INFO_TO_VNFM	VIM can send network resource information to the VNFM	M		
VIM_NRM_TERMINATE_BY_VNFM	VIM supports "terminate network resource" operation requests from the VNFM	M		

Table 4.2.3-5

Functional Block	VIM			
Functional Area	VNF Lifecycle Management			
Observed Reference Point	Or-Vi			
Observed Interface	Virtualised Storage Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_SRM_ALLOCATE_BY_NFVO	VIM supports "allocate storage resource" operation requests from the NFVO	M		
VIM_SRM_INFO_TO_NFVO	VIM can send storage resource information to the NFVO	M		
VIM_SRM_TERMINATE_BY_NFVO	VIM supports "terminate storage resource" operation requests from the NFVO	M		

Table 4.2.3-6

Functional Block	VIM			
Functional Area	VNF Lifecycle Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Virtualised Storage Resource Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_SRM_ALLOCATE_BY_VNFM	VIM supports "allocate storage resource" operation requests from the VNFM	M		
VIM_SRM_INFO_TO_VNFM	VIM can send storage resource information to the VNFM	M		
VIM_SRM_TERMINATE_BY_VNFM	VIM supports "terminate storage resource" operation requests from the VNFM	M		

4.2.4 Fault Management

Table 4.2.4-1

Functional Block	VIM			
Functional Area	Fault Management			
Observed Reference Point	Or-Vi			
Observed Interface	Virtualised Resources Fault Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_FM_SUBSCRIBE_BY_NFVO	VIM supports alarm notifications subscriptions by the NFVO	M		
VIM_FM_NOTIFY_BY_NFVO	VIM can generate virtualised resources fault alarm notifications to the NFVO	M		
VIM_FM_QUERY_BY_NFVO	VIM supports virtualised resource fault alarm list queries by the NFVO	M		

Table 4.2.4-2

Functional Block	VIM			
Functional Area	Fault Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Virtualised Resources Fault Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_FM_SUBSCRIBE_BY_VNFM	VIM supports alarm notifications subscriptions by the VNFM	M		
VIM_FM_NOTIFY_BY_VNFM	VIM can generate virtualised resources fault alarm notifications to the VNFM	M		
VIM_FM_QUERY_BY_VNFM	VIM supports virtualised resources fault alarm list queries by the VNFM	M		

4.2.5 Performance Management

Table 4.2.5-1

Functional Block	VIM			
Functional Area	Fault Management			
Observed Reference Point	Or-Vi			
Observed Interface	Virtualised Resources Performance Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 005 [i.3]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_PM_PMJOB_CREATE_BY_NFVO	VIM supports VR PM jobs creation by the NFVO	M		
VIM_PM_PMJOB_SUBSCRIBE_BY_NFVO	VIM supports VR PM job subscriptions from the NFVO	M		
VIM_PM_PMJOB_NOTIFY_BY_NFVO	VIM can generate VR PM notifications to the NFVO	M		
VIM_PM_PMJOB_QUERY_BY_NFVO	VIM supports VR PM job queries by the NFVO	M		
VIM_PM_PMJOB_DELETE_BY_NFVO	VIM supports VR PM jobs deletion by the NFVO	M		
VIM_PM_PMTH_CREATE_BY_NFVO	VIM supports VR PM thresholds creation by the NFVO	M		
VIM_PM_PMTH_QUERY_BY_NFVO	VIM supports VR PM threshold queries by the NFVO	M		
VIM_PM_PMTH_DELETE_BY_NFVO	VIM supports VR PM thresholds deletion by the NFVO	M		

Table 4.2.5-2

Functional Block	VIM			
Functional Area	Performance Management			
Observed Reference Point	Vi-Vnfm			
Observed Interface	Virtualised Resources Performance Management			
Producer/Consumer	Producer			
References	ETSI GS NFV-IFA 006 [i.4]			
Interoperability Features				
Id	Feature	Status	Support	Details
VIM_PM_PMJOB_CREATE_BY_VNFM	VIM supports VR PM jobs creation by the VNFM	M		
VIM_PM_PMJOB_SUBSCRIBE_BY_VNFM	VIM supports VR PM job subscriptions from the VNFM	M		
VIM_PM_PMJOB_NOTIFY_BY_VNFM	VIM can generate VR PM notifications to the VNFM	M		
VIM_PM_PMJOB_QUERY_BY_VNFM	VIM supports VR PM job queries by the VNFM	M		
VIM_PM_PMJOB_DELETE_BY_VNFM	VIM supports VR PM jobs deletion by the VNFM	M		
VIM_PM_PMTH_CREATE_BY_VNFM	VIM supports VR PM thresholds creation by the VNFM	M		
VIM_PM_PMTH_QUERY_BY_VNFM	VIM supports VR PM threshold queries by the VNFM	M		
VIM_PM_PMTH_DELETE_BY_VNFM	VIM supports VR PM thresholds deletion by the VNFM	M		