

ETSI GS NFV-IFA 006 v2.5.1 (2018-08)



Network Functions Virtualisation (NFV) Release 2; Management and Orchestration; Vi-Vnfm reference point - Interface and Information Model Specification

iTeh S/N: 4d3f-9a2b-05d2cec1ae0f/etsi-gs-nfv-ifa-006-v2.5.1-2018-08
Full Standard (Standard Review)
<https://standards.iteh.ai/catalog/gs-nfv-ifa-006-v2.5.1-2018-08>

Reference

RGS/NFV-IFA006ED251

Keywordsconfiguration, management, MANO, network,
NFV, 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

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/CommitteeSupportStaff.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.

© ETSI 2018.
All rights reserved.

DECT™, PLUGTESTS™, UMTS™ and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and
of the 3GPP Organizational Partners.

oneM2M logo is protected for the benefit of its Members.
GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	13
Foreword.....	13
Modal verbs terminology	13
1 Scope	14
2 References	14
2.1 Normative references.....	14
2.2 Informative references	14
3 Definitions and abbreviations.....	15
3.1 Definitions	15
3.2 Abbreviations.....	15
4 Overview of interfaces and information models associated to the Vi-Vnfm reference point	16
4.1 Introduction.....	16
4.2 Relation to other NFV group specifications	17
4.3 Conventions	17
5 Reference point and interface requirements	17
5.1 Introduction.....	17
5.2 Vi-Vnfm Reference Point Requirements	17
5.3 Interface Requirements	18
5.3.1 Software Image Management interface requirements.....	18
5.3.2 Virtualised Resources Information Management interface requirements	19
5.3.3 Virtualised Resources Management interface requirements	19
5.3.4 Virtualised Resources Reservation Management interface requirements	20
5.3.5 Virtualised Resources Change Notification interface requirements	20
5.3.6 Virtualised Resources Reservation Change Notification interface requirements	20
5.3.7 Virtualised Resources Quota Management interface requirements	20
5.3.8 Virtualised Resources Performance Management interface requirements	21
5.3.9 Virtualised Resources Fault Management interface requirements	22
6 VNFM exposed interfaces.....	22
7 VIM exposed interfaces	22
7.1 Introduction.....	22
7.2 Software Image Management Interface	22
7.2.1 Description	22
7.2.2 Query Images operation	23
7.2.2.1 Description	23
7.2.2.2 Input parameters	23
7.2.2.3 Output parameters	23
7.2.2.4 Operation results.....	23
7.2.3 Query Image operation	23
7.2.3.1 Description	23
7.2.3.2 Input parameters	24
7.2.3.3 Output parameters	24
7.2.3.4 Operation results.....	24
7.3 Virtualised Compute Interfaces	24
7.3.1 Virtualised Compute Resources Management Interface	24
7.3.1.1 Description	24
7.3.1.2 Allocate Virtualised Compute Resource operation.....	24
7.3.1.2.1 Description.....	24
7.3.1.2.2 Input parameters.....	24
7.3.1.2.3 Output parameters.....	26
7.3.1.2.4 Operation results	26
7.3.1.3 Query Virtualised Compute Resource operation	26
7.3.1.3.1 Description.....	26
7.3.1.3.2 Input parameters.....	26

7.3.1.3.3	Output parameters	26
7.3.1.3.4	Operation results	27
7.3.1.4	Update Virtualised Compute Resource operation	27
7.3.1.4.1	Description	27
7.3.1.4.2	Input parameters	27
7.3.1.4.3	Output parameters	28
7.3.1.4.4	Operation results	28
7.3.1.5	Terminate Virtualised Compute Resource operation	28
7.3.1.5.1	Description	28
7.3.1.5.2	Input parameters	28
7.3.1.5.3	Output parameters	28
7.3.1.5.4	Operation results	29
7.3.1.6	Operate Virtualised Compute Resource operation	29
7.3.1.6.1	Description	29
7.3.1.6.2	Input parameters	29
7.3.1.6.3	Output parameters	29
7.3.1.6.4	Operation results	30
7.3.1.7	Scale Virtualised Compute Resource operation	30
7.3.1.7.1	Description	30
7.3.1.7.2	Input parameters	30
7.3.1.7.3	Output parameters	30
7.3.1.7.4	Operation results	30
7.3.1.8	Migrate Virtualised Compute Resource operation	30
7.3.1.8.1	Description	30
7.3.1.8.2	Input parameters	31
7.3.1.8.3	Output parameters	31
7.3.1.8.4	Operation results	31
7.3.1.9	Create Virtualised Compute Resource Affinity Or AntiAffinity Constraints Group operation	32
7.3.1.9.1	Description	32
7.3.1.9.2	Input parameters	32
7.3.1.9.3	Output parameters	32
7.3.1.9.4	Operation results	32
7.3.2	Virtualised Compute Resources Change Notification Interface	32
7.3.2.1	Description	32
7.3.2.2	Subscribe operation	33
7.3.2.2.1	Description	33
7.3.2.2.2	Input parameters	33
7.3.2.2.3	Output parameters	33
7.3.2.2.4	Operation results	33
7.3.2.3	Notify operation	33
7.3.2.3.1	Description	33
7.3.3	Virtualised Compute Resources Information Management Interface	34
7.3.3.1	Description	34
7.3.3.2	Subscribe operation	34
7.3.3.2.1	Description	34
7.3.3.2.2	Input parameters	34
7.3.3.2.3	Output parameters	34
7.3.3.2.4	Operation results	34
7.3.3.3	Notify operation	35
7.3.3.3.1	Description	35
7.3.3.4	Query Virtualised Compute Resource Information operation	35
7.3.3.4.1	Description	35
7.3.3.4.2	Input parameters	35
7.3.3.4.3	Output parameters	35
7.3.3.4.4	Operation results	36
7.3.4	Virtualised Compute Flavour Management Interface	36
7.3.4.1	Introduction	36
7.3.4.2	Create Compute Flavour operation	36
7.3.4.2.1	Description	36
7.3.4.2.2	Input parameters	36
7.3.4.2.3	Output parameters	36

7.3.4.2.4	Operation results	36
7.3.4.3	Query Compute Flavour operation	36
7.3.4.3.1	Description.....	36
7.3.4.3.2	Input parameters.....	37
7.3.4.3.3	Output parameters.....	37
7.3.4.3.4	Operation results	37
7.3.4.4	Delete Compute Flavour operation.....	37
7.3.4.4.1	Description.....	37
7.3.4.4.2	Input parameters.....	37
7.3.4.4.3	Output parameters.....	38
7.3.4.4.4	Operation results	38
7.4	Virtualised Network Interfaces	38
7.4.1	Virtualised Network Resources Management Interface	38
7.4.1.1	Description	38
7.4.1.2	Allocate Virtualised Network Resource operation	38
7.4.1.2.1	Description.....	38
7.4.1.2.2	Input parameters.....	38
7.4.1.2.3	Output parameters.....	39
7.4.1.2.4	Operation results	39
7.4.1.3	Query Virtualised Network Resource operation.....	40
7.4.1.3.1	Description.....	40
7.4.1.3.2	Input parameters.....	40
7.4.1.3.3	Output parameters.....	40
7.4.1.3.4	Operation results	40
7.4.1.4	Update Virtualised Network Resource operation	40
7.4.1.4.1	Description.....	40
7.4.1.4.2	Input parameters.....	41
7.4.1.4.3	Output parameters.....	41
7.4.1.4.4	Operation results	41
7.4.1.5	Terminate Virtualised Network Resource operation	42
7.4.1.5.1	Description.....	42
7.4.1.5.2	Input parameters.....	42
7.4.1.5.3	Output parameters.....	42
7.4.1.5.4	Operation results	42
7.4.1.6	Create Virtualised Network Resource Affinity Or AntiAffinity Constraints Group operation	42
7.4.1.6.1	Description.....	42
7.4.1.6.2	Input parameters.....	43
7.4.1.6.3	Output parameters.....	43
7.4.1.6.4	Operation results	43
7.4.2	Virtualised Network Resources Change Notification Interface	43
7.4.2.1	Description	43
7.4.2.2	Subscribe operation	43
7.4.2.2.1	Description.....	43
7.4.2.2.2	Input parameters.....	43
7.4.2.2.3	Output parameters.....	44
7.4.2.2.4	Operation results	44
7.4.2.3	Notify operation.....	44
7.4.2.3.1	Description	44
7.4.3	Virtualised Network Resources Information Management Interface	44
7.4.3.1	Description	44
7.4.3.2	Subscribe operation	45
7.4.3.2.1	Description.....	45
7.4.3.2.2	Input parameters.....	45
7.4.3.2.3	Output parameters.....	45
7.4.3.2.4	Operation results	45
7.4.3.3	Notify operation.....	45
7.4.3.3.1	Description	45
7.4.3.4	Query Virtualised Network Resource Information operation	46
7.4.3.4.1	Description.....	46
7.4.3.4.2	Input parameters.....	46
7.4.3.4.3	Output parameters.....	46

7.4.3.4.4	Operation results	46
7.5	Virtualised Storage Interfaces	46
7.5.1	Virtualised Storage Resources Management Interface	46
7.5.1.1	Description	46
7.5.1.2	Allocate Virtualised Storage Resource operation	47
7.5.1.2.1	Description	47
7.5.1.2.2	Input parameters	47
7.5.1.2.3	Output parameters	47
7.5.1.2.4	Operation results	48
7.5.1.3	Query Virtualised Storage Resource operation	48
7.5.1.3.1	Description	48
7.5.1.3.2	Input parameters	48
7.5.1.3.3	Output parameters	48
7.5.1.3.4	Operation results	49
7.5.1.4	Update Virtualised Storage Resource operation	49
7.5.1.4.1	Description	49
7.5.1.4.2	Input parameters	49
7.5.1.4.3	Output parameters	49
7.5.1.4.4	Operation results	49
7.5.1.5	Terminate Virtualised Storage Resource operation	50
7.5.1.5.1	Description	50
7.5.1.5.2	Input parameters	50
7.5.1.5.3	Output parameters	50
7.5.1.5.4	Operation results	50
7.5.1.6	Operate Virtualised Storage Resource operation	50
7.5.1.6.1	Description	50
7.5.1.6.2	Input parameters	50
7.5.1.6.3	Output parameters	51
7.5.1.6.4	Operation results	51
7.5.1.7	Scale Virtualised Storage Resource operation	51
7.5.1.7.1	Description	51
7.5.1.7.2	Input parameters	51
7.5.1.7.3	Output parameters	52
7.5.1.7.4	Operation results	52
7.5.1.8	Migrate Virtualised Storage Resource operation	52
7.5.1.8.1	Description	52
7.5.1.8.2	Input parameters	52
7.5.1.8.3	Output parameters	53
7.5.1.8.4	Operation results	53
7.5.1.9	Create Virtualised Storage Resource Affinity Or AntiAffinity Constraints Group operation	53
7.5.1.9.1	Description	53
7.5.1.9.2	Input parameters	53
7.5.1.9.3	Output parameters	54
7.5.1.9.4	Operation results	54
7.5.2	Virtualised Storage Resources Change Notification Interface	54
7.5.2.1	Description	54
7.5.2.2	Subscribe operation	54
7.5.2.2.1	Description	54
7.5.2.2.2	Input parameters	54
7.5.2.2.3	Output parameters	54
7.5.2.2.4	Operation results	55
7.5.2.3	Notify operation	55
7.5.2.3.1	Description	55
7.5.3	Virtualised Storage Resources Information Management Interface	55
7.5.3.1	Description	55
7.5.3.2	Subscribe operation	55
7.5.3.2.1	Description	55
7.5.3.2.2	Input parameters	56
7.5.3.2.3	Output parameters	56
7.5.3.2.4	Operation results	56
7.5.3.3	Notify operation	56

7.5.3.3.1	Description	56
7.5.3.4	Query Virtualised Storage Resources Information operation	56
7.5.3.4.1	Description	56
7.5.3.4.2	Input parameters	57
7.5.3.4.3	Output parameters	57
7.5.3.4.4	Operation results	57
7.6	Virtualised Resources Fault Management Interface	57
7.6.1	Description	57
7.6.2	Subscribe operation	57
7.6.2.1	Description	57
7.6.2.2	Input parameters	58
7.6.2.3	Output parameters	58
7.6.2.4	Operation results	58
7.6.3	Notify operation	58
7.6.3.1	Description	58
7.6.4	Get Alarm List operation	58
7.6.4.1	Description	58
7.6.4.2	Input parameters	59
7.6.4.3	Output parameters	59
7.6.4.4	Operation results	59
7.7	Virtualised Resources Performance Management Interface	59
7.7.1	Description	59
7.7.2	Create PM Job operation	60
7.7.2.1	Description	60
7.7.2.2	Input parameters	60
7.7.2.3	Output parameters	60
7.7.2.4	Operation results	61
7.7.3	Query PM Job operation	61
7.7.3.1	Description	61
7.7.3.2	Input parameters	61
7.7.3.3	Output parameters	61
7.7.3.4	Operation results	61
7.7.4	Delete PM Jobs operation	61
7.7.4.1	Description	61
7.7.4.2	Input parameters	62
7.7.4.3	Output parameters	62
7.7.4.4	Operation results	62
7.7.5	Subscribe operation	62
7.7.5.1	Description	62
7.7.5.2	Input parameters	62
7.7.5.3	Output parameters	62
7.7.5.4	Operation results	63
7.7.6	Notify operation	63
7.7.6.1	Description	63
7.7.7	Create Threshold operation	63
7.7.7.1	Description	63
7.7.7.2	Input parameters	63
7.7.7.3	Output parameters	64
7.7.7.4	Operation results	64
7.7.8	Query Threshold operation	64
7.7.8.1	Description	64
7.7.8.2	Input parameters	64
7.7.8.3	Output parameters	64
7.7.8.4	Operation results	65
7.7.9	Delete Thresholds operation	65
7.7.9.1	Description	65
7.7.9.2	Input parameters	65
7.7.9.3	Output parameters	65
7.7.9.4	Operation results	65
7.8	Virtualised Resource Reservation Interfaces	65
7.8.1	Virtualised Compute Resources Reservation Management Interface	65

7.8.1.1	Description	65
7.8.1.2	Query Compute Resource Reservation operation.....	66
7.8.1.2.1	Description.....	66
7.8.1.2.2	Input parameters.....	66
7.8.1.2.3	Output parameters.....	66
7.8.1.2.4	Operation results	66
7.8.2	Virtualised Network Resources Reservation Management Interface	66
7.8.2.1	Description	66
7.8.2.2	Query Network Resource Reservation operation	66
7.8.2.2.1	Description.....	66
7.8.2.2.2	Input parameters.....	67
7.8.2.2.3	Output parameters.....	67
7.8.2.2.4	Operation results	67
7.8.3	Virtualised Storage Resources Reservation Management Interface	67
7.8.3.1	Description	67
7.8.3.2	Query Storage Resource Reservation operation	67
7.8.3.2.1	Description.....	67
7.8.3.2.2	Input parameters.....	68
7.8.3.2.3	Output parameters	68
7.8.3.2.4	Operation results	68
7.8.4	Virtualised Resources Reservation Change Notification Interface	68
7.8.4.1	Description	68
7.8.4.2	Subscribe operation	68
7.8.4.2.1	Description.....	68
7.8.4.2.2	Input parameters.....	68
7.8.4.2.3	Output parameters.....	69
7.8.4.2.4	Operation results	69
7.8.4.3	Notify operation.....	69
7.8.4.3.1	Description.....	69
7.9	Virtualised Resource Quota Interfaces	69
7.9.1	Virtualised Compute Resources Quota Management Interface.....	69
7.9.1.1	Description	69
7.9.1.2	Query Compute Resource Quota operation.....	69
7.9.1.2.1	Description.....	69
7.9.1.2.2	Input parameters.....	70
7.9.1.2.3	Output parameters	70
7.9.1.2.4	Operation results	70
7.9.2	Virtualised Network Resources Quota Management Interface	70
7.9.2.1	Description	70
7.9.2.2	Query Network Resource Quota operation.....	70
7.9.2.2.1	Description.....	70
7.9.2.2.2	Input parameters.....	71
7.9.2.2.3	Output parameters	71
7.9.2.2.4	Operation results	71
7.9.3	Virtualised Storage Resources Quota Management Interface	71
7.9.3.1	Description	71
7.9.3.2	Query Storage Resource operation	71
7.9.3.2.1	Description.....	71
7.9.3.2.2	Input parameters.....	72
7.9.3.2.3	Output parameters	72
7.9.3.2.4	Operation results	72
7.9.4	Virtualised Resources Quota Change Notification Interface.....	72
7.9.4.1	Description	72
7.9.4.2	Subscribe operation	72
7.9.4.2.1	Description.....	72
7.9.4.2.2	Input parameters.....	73
7.9.4.2.3	Output parameters	73
7.9.4.2.4	Operation results	73
7.9.4.3	Notify operation.....	73
7.9.4.3.1	Description.....	73
8	Information element exchanged	73

8.1	Introduction.....	73
8.2	Information elements related to software images	73
8.2.1	Introduction.....	73
8.2.2	SoftwareImageInformation information element	74
8.3	Information elements and notifications related to Consumable Virtualised Resources Information	74
8.3.1	Introduction.....	74
8.3.2	InformationChangeNotification	74
8.3.2.1	Description	74
8.3.2.2	Trigger conditions	74
8.3.2.3	Attributes	75
8.3.3	Information elements related to Virtual Compute Resource Information	75
8.3.3.1	Introduction	75
8.3.3.2	VirtualComputeResourceInformation information element	75
8.3.3.2.1	Description.....	75
8.3.3.2.2	Attributes	75
8.3.3.3	VirtualCpuResourceInformation information element	76
8.3.3.3.1	Description.....	76
8.3.3.3.2	Attributes	76
8.3.3.4	VirtualMemoryResourceInformation information element	76
8.3.3.4.1	Description.....	76
8.3.3.4.2	Attributes	76
8.3.4	VirtualStorageResourceInformation information element	76
8.3.4.1	Description	76
8.3.4.2	Attributes	77
8.3.5	VirtualNetworkResourceInformation information element	77
8.3.5.1	Description	77
8.3.5.2	Attributes	77
8.4	Information elements and notifications related to Virtualised Resources	77
8.4.1	Introduction	77
8.4.2	Information elements related to Virtual Compute Flavour.....	77
8.4.2.1	Introduction	77
8.4.2.2	VirtualComputeFlavour information element	78
8.4.2.2.1	Description.....	78
8.4.2.2.2	Attributes	78
8.4.2.3	VirtualCpuData information element	78
8.4.2.3.1	Description.....	78
8.4.2.3.2	Attributes	78
8.4.2.4	VirtualCpuPinningData information element format	79
8.4.2.4.1	Description.....	79
8.4.2.4.2	Attributes	79
8.4.2.5	VirtualMemoryData information element format.....	79
8.4.2.5.1	Description.....	79
8.4.2.5.2	Attributes	79
8.4.2.6	VirtualNetworkInterfaceData information element	80
8.4.2.6.1	Description.....	80
8.4.2.6.2	Attributes	80
8.4.3	Information elements related to Virtual Compute.....	80
8.4.3.1	Introduction	80
8.4.3.2	VirtualCompute information element.....	81
8.4.3.2.1	Description.....	81
8.4.3.2.2	Attributes	81
8.4.3.3	VirtualCpu information element format	81
8.4.3.3.1	Description.....	81
8.4.3.3.2	Attributes	81
8.4.3.4	VirtualCpuPinning information element format.....	82
8.4.3.4.1	Description.....	82
8.4.3.4.2	Attributes	82
8.4.3.5	VirtualMemory information element format	82
8.4.3.5.1	Description.....	82
8.4.3.5.2	Attributes	82
8.4.3.6	VirtualNetworkInterface information element	83

8.4.3.6.1	Description	83
8.4.3.6.2	Attributes	83
8.4.3.7	VirtualInterfaceData information element	84
8.4.3.7.1	Description	84
8.4.3.7.2	Attributes	84
8.4.4	Information elements related to Virtual Network Data	84
8.4.4.1	Introduction	84
8.4.4.2	VirtualNetworkData information element format	84
8.4.4.2.1	Description	84
8.4.4.2.2	Attributes	85
8.4.4.3	NetworkQos information element format	85
8.4.4.3.1	Description	85
8.4.4.3.2	Attributes	85
8.4.4.4	NetworkSubnetData information element	85
8.4.4.4.1	Description	85
8.4.4.4.2	Attributes	85
8.4.4.5	VirtualNetworkPortData information element	86
8.4.4.5.1	Description	86
8.4.4.5.2	Attributes	86
8.4.5	Information elements related to Virtual Network	87
8.4.5.1	Introduction	87
8.4.5.2	VirtualNetwork information element	87
8.4.5.2.1	Description	87
8.4.5.2.2	Attributes	87
8.4.5.3	NetworkSubnet information element	88
8.4.5.3.1	Description	88
8.4.5.3.2	Attributes	88
8.4.5.4	VirtualNetworkPort information element	89
8.4.5.4.1	Description	89
8.4.5.4.2	Attributes	89
8.4.6	Information elements related to Virtual Storage Flavour	90
8.4.6.1	Introduction	90
8.4.6.2	VirtualStorageFlavour information element	90
8.4.6.2.1	Description	90
8.4.6.2.2	Attributes	90
8.4.6.3	VirtualStorageData information element	90
8.4.6.3.1	Description	90
8.4.6.3.2	Attributes	90
8.4.7	Information elements related to Virtual Storage	90
8.4.7.1	Introduction	90
8.4.7.2	VirtualStorage information element	91
8.4.7.2.1	Description	91
8.4.7.2.2	Attributes	91
8.4.8	Information elements related to Affinity or AntiAffinity	91
8.4.8.1	Introduction	91
8.4.8.2	AffinityOrAntiAffinityConstraint information element	91
8.4.8.2.1	Description	91
8.4.8.2.2	Attributes	92
8.4.8.3	AffinityOrAntiAffinityResourceList information element	92
8.4.8.3.1	Description	92
8.4.8.3.2	Attributes	93
8.4.9	VirtualisedResourceChangeNotification	93
8.4.9.1	Description	93
8.4.9.2	Trigger conditions	93
8.4.9.3	Attributes	93
8.4.10	UserData information element	93
8.4.10.1	Description	93
8.4.10.2	Attributes	93
8.5	Information elements and notifications related to Virtualised Resources Performance Management	94
8.5.1	Introduction	94
8.5.2	ObjectSelection information element	94

8.5.2.1	Description	94
8.5.2.2	Attributes	94
8.5.3	PmJob information element	94
8.5.3.1	Description	94
8.5.3.2	Attributes	95
8.5.4	Threshold information element	95
8.5.4.1	Description	95
8.5.4.2	Attributes	95
8.5.5	PerformanceReport information element	96
8.5.5.1	Description	96
8.5.5.2	Attributes	96
8.5.6	PerformanceReportEntry information element	96
8.5.6.1	Description	96
8.5.6.2	Attributes	96
8.5.7	PerformanceValueEntry information element	97
8.5.7.1	Description	97
8.5.7.2	Attributes	97
8.5.8	PerformanceInformationAvailableNotification	97
8.5.8.1	Description	97
8.5.8.2	Trigger Conditions	97
8.5.8.3	Attributes	97
8.5.9	ThresholdCrossedNotification	98
8.5.9.1	Description	98
8.5.9.2	Trigger Condition	98
8.5.9.3	Attributes	98
8.6	Information elements and notifications related to Virtualised Resources Fault Management	98
8.6.1	Introduction	98
8.6.2	AlarmNotification	98
8.6.2.1	Description	98
8.6.2.2	Trigger conditions	98
8.6.2.3	Attributes	98
8.6.3	AlarmClearedNotification	99
8.6.3.1	Description	99
8.6.3.2	Trigger conditions	99
8.6.3.3	Attributes	99
8.6.4	Alarm information element	99
8.6.4.1	Description	99
8.6.4.2	Attributes	99
8.7	Information elements and notifications related to Reservation	100
8.7.1	Introduction	100
8.7.2	ReservedVirtualCompute information element	100
8.7.2.1	Description	100
8.7.2.2	Attributes	100
8.7.3	Information elements related to Compute Pool Reservation	101
8.7.3.1	Introduction	101
8.7.3.2	ReservedComputePool information element	101
8.7.3.2.1	Description	101
8.7.3.2.2	Attributes	101
8.7.3.3	ReservedVirtualComputeAttributes information element	102
8.7.3.3.1	Description	102
8.7.3.3.2	Attributes	102
8.7.4	Information elements related to Network reservation	102
8.7.4.1	Introduction	102
8.7.4.2	ReservedVirtualNetwork information element	102
8.7.4.2.1	Description	102
8.7.4.2.2	Attributes	102
8.7.4.3	ReservedVirtualNetworkAttributes information element	103
8.7.4.3.1	Description	103
8.7.4.3.2	Attributes	103
8.7.4.4	ReservedVirtualNetworkPort information element	104
8.7.4.4.1	Description	104

8.7.4.4.2	Attributes	104
8.7.5	Information elements related to Virtualisation Container Reservation	104
8.7.5.1	Introduction	104
8.7.5.2	ReservedVirtualizationContainer information element	104
8.7.5.2.1	Description.....	104
8.7.5.2.2	Attributes	104
8.7.6	Information elements related to Storage reservation	105
8.7.6.1	Introduction	105
8.7.6.2	ReservedVirtualStorage information element	105
8.7.6.2.1	Description.....	105
8.7.6.2.2	Attributes	105
8.7.6.3	ReservedStoragePool information element	106
8.7.6.3.1	Description.....	106
8.7.6.3.2	Attributes	106
8.7.7	VirtualisedResourceReservationChangeNotification	106
8.7.7.1	Description	106
8.7.7.2	Trigger conditions	106
8.7.7.3	Attributes	107
8.8	Information elements and notifications related to Quota	107
8.8.1	Introduction	107
8.8.2	Information elements related to Compute Quota	107
8.8.2.1	Introduction	107
8.8.2.2	VirtualComputeQuota information element	107
8.8.2.2.1	Description.....	107
8.8.2.2.2	Attributes	107
8.8.3	Information elements related to Network Quota	108
8.8.3.1	Introduction	108
8.8.3.2	VirtualNetworkQuota information element	108
8.8.3.2.1	Description.....	108
8.8.3.2.2	Attributes	108
8.8.4	Information elements related to Storage Quota	108
8.8.4.1	Introduction.....	108
8.8.4.2	VirtualStorageQuota information element	108
8.8.4.2.1	Description.....	108
8.8.4.2.2	Attributes	108
8.8.5	VirtualisedResourceQuotaChangeNotification	109
8.8.5.1	Description	109
8.8.5.2	Trigger conditions	109
8.8.5.3	Attributes	109
Annex A (informative):	Bibliography.....	110
Annex B (informative):	Authors & contributors.....	111
Annex C (informative):	Change History	113
History		114

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

Modal verbs terminology

In the present document "shall", "shall not", "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.

ITSI STANDARD PREVIEW
https://standards.etsi.ai/catalog/standard:4d3f-9a2b-05d2cc1ae0/etsi-gs-nfv-ifa-006-v25.1-2018-08