



Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Vi-Vnfm reference point - Interface and Information Model Specification

iTeh S/N: 4245-aE80-dd529288e4cf/etsi-gs-nfv-ifa-006-v3.1.1-2018-08
Full standard
<https://standards.iteh.ai/catalog/etsi-gs-nfv-ifa-006-v3.1.1-2018-08-4245-aE80-dd529288e4cf>

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

RGS/NFV-IFA006ed311

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	14
Foreword.....	14
Modal verbs terminology	14
1 Scope	15
2 References	15
2.1 Normative references	15
2.2 Informative references	15
3 Definitions and abbreviations.....	16
3.1 Definitions	16
3.2 Abbreviations.....	16
4 Overview of interfaces and information models associated to the Vi-Vnfm reference point	17
4.1 Introduction.....	17
4.2 Relation to other NFV group specifications	18
4.3 Conventions	18
5 Reference point and interface requirements	18
5.1 Introduction.....	18
5.2 Vi-Vnfm Reference Point Requirements	18
5.3 Interface Requirements	19
5.3.1 Software Image Management interface requirements	19
5.3.2 Virtualised Resources Information Management interface requirements	20
5.3.3 Virtualised Resources Management interface requirements	20
5.3.4 Virtualised Resources Reservation Management interface requirements	21
5.3.5 Virtualised Resources Change Notification interface requirements	21
5.3.6 Virtualised Resources Reservation Change Notification interface requirements	21
5.3.7 Virtualised Resources Quota Management interface requirements	21
5.3.8 Virtualised Resources Performance Management interface requirements	22
5.3.9 Virtualised Resources Fault Management interface requirements	23
5.3.10 Policy Management interface requirements	24
6 VNFM exposed interfaces.....	24
7 VIM exposed interfaces	24
7.1 Introduction.....	24
7.2 Software Image Management Interface	25
7.2.1 Description	25
7.2.2 Query Images operation	25
7.2.2.1 Description	25
7.2.2.2 Input parameters	25
7.2.2.3 Output parameters	25
7.2.2.4 Operation results.....	26
7.2.3 Query Image operation	26
7.2.3.1 Description	26
7.2.3.2 Input parameters	26
7.2.3.3 Output parameters	26
7.2.3.4 Operation results.....	26
7.3 Virtualised Compute Interfaces	26
7.3.1 Virtualised Compute Resources Management Interface	26
7.3.1.1 Description	26
7.3.1.2 Allocate Virtualised Compute Resource operation.....	27
7.3.1.2.1 Description.....	27
7.3.1.2.2 Input parameters.....	27
7.3.1.2.3 Output parameters.....	28
7.3.1.2.4 Operation results	28
7.3.1.3 Query Virtualised Compute Resource operation	28

7.3.1.3.1	Description.....	28
7.3.1.3.2	Input parameters.....	28
7.3.1.3.3	Output parameters.....	29
7.3.1.3.4	Operation results.....	29
7.3.1.4	Update Virtualised Compute Resource operation.....	29
7.3.1.4.1	Description.....	29
7.3.1.4.2	Input parameters.....	29
7.3.1.4.3	Output parameters.....	30
7.3.1.4.4	Operation results.....	30
7.3.1.5	Terminate Virtualised Compute Resource operation.....	30
7.3.1.5.1	Description.....	30
7.3.1.5.2	Input parameters.....	31
7.3.1.5.3	Output parameters.....	31
7.3.1.5.4	Operation results.....	31
7.3.1.6	Operate Virtualised Compute Resource operation	31
7.3.1.6.1	Description.....	31
7.3.1.6.2	Input parameters.....	31
7.3.1.6.3	Output parameters.....	32
7.3.1.6.4	Operation results.....	32
7.3.1.7	Scale Virtualised Compute Resource operation	32
7.3.1.7.1	Description.....	32
7.3.1.7.2	Input parameters.....	33
7.3.1.7.3	Output parameters.....	33
7.3.1.7.4	Operation results	33
7.3.1.8	Migrate Virtualised Compute Resource operation	33
7.3.1.8.1	Description.....	33
7.3.1.8.2	Input parameters.....	34
7.3.1.8.3	Output parameters.....	34
7.3.1.8.4	Operation results	34
7.3.1.9	Create Virtualised Compute Resource Affinity Or AntiAffinity Constraints Group operation.....	34
7.3.1.9.1	Description.....	34
7.3.1.9.2	Input parameters.....	35
7.3.1.9.3	Output parameters.....	35
7.3.1.9.4	Operation results	35
7.3.1.10	Attach Virtualised Storage Resource operation.....	35
7.3.1.10.1	Description.....	35
7.3.1.10.2	Input parameters.....	35
7.3.1.10.3	Output parameters.....	36
7.3.1.10.4	Operation results	36
7.3.1.11	Detach Virtualised Storage Resource operation	36
7.3.1.11.1	Description.....	36
7.3.1.11.2	Input parameters.....	36
7.3.1.11.3	Output parameters.....	36
7.3.1.11.4	Operation results	37
7.3.2	Virtualised Compute Resources Change Notification Interface.....	37
7.3.2.1	Description	37
7.3.2.2	Subscribe operation	37
7.3.2.2.1	Description.....	37
7.3.2.2.2	Input parameters.....	37
7.3.2.2.3	Output parameters.....	37
7.3.2.2.4	Operation results	37
7.3.2.3	Notify operation.....	38
7.3.2.3.1	Description.....	38
7.3.3	Virtualised Compute Resources Information Management Interface	38
7.3.3.1	Description	38
7.3.3.2	Subscribe operation	38
7.3.3.2.1	Description.....	38
7.3.3.2.2	Input parameters.....	39
7.3.3.2.3	Output parameters.....	39
7.3.3.2.4	Operation results	39
7.3.3.3	Notify operation.....	39
7.3.3.3.1	Description.....	39

7.3.3.4	Query Virtualised Compute Resource Information operation	39
7.3.3.4.1	Description.....	39
7.3.3.4.2	Input parameters.....	40
7.3.3.4.3	Output parameters.....	40
7.3.3.4.4	Operation results	40
7.3.4	Virtualised Compute Flavour Management Interface	40
7.3.4.1	Introduction	40
7.3.4.2	Create Compute Flavour operation.....	40
7.3.4.2.1	Description.....	40
7.3.4.2.2	Input parameters.....	41
7.3.4.2.3	Output parameters.....	41
7.3.4.2.4	Operation results	41
7.3.4.3	Query Compute Flavour operation	41
7.3.4.3.1	Description.....	41
7.3.4.3.2	Input parameters.....	41
7.3.4.3.3	Output parameters.....	41
7.3.4.3.4	Operation results	42
7.3.4.4	Delete Compute Flavour operation.....	42
7.3.4.4.1	Description.....	42
7.3.4.4.2	Input parameters.....	42
7.3.4.4.3	Output parameters.....	42
7.3.4.4.4	Operation results	42
7.4	Virtualised Network Interfaces	43
7.4.1	Virtualised Network Resources Management Interface	43
7.4.1.1	Description	43
7.4.1.2	Allocate Virtualised Network Resource operation	43
7.4.1.2.1	Description.....	43
7.4.1.2.2	Input parameters.....	43
7.4.1.2.3	Output parameters.....	44
7.4.1.2.4	Operation results	44
7.4.1.3	Query Virtualised Network Resource operation	44
7.4.1.3.1	Description.....	44
7.4.1.3.2	Input parameters.....	45
7.4.1.3.3	Output parameters.....	45
7.4.1.3.4	Operation results	45
7.4.1.4	Update Virtualised Network Resource operation	45
7.4.1.4.1	Description.....	45
7.4.1.4.2	Input parameters.....	45
7.4.1.4.3	Output parameters.....	46
7.4.1.4.4	Operation results	46
7.4.1.5	Terminate Virtualised Network Resource operation	47
7.4.1.5.1	Description.....	47
7.4.1.5.2	Input parameters.....	47
7.4.1.5.3	Output parameters.....	47
7.4.1.5.4	Operation results	47
7.4.1.6	Create Virtualised Network Resource Affinity Or AntiAffinity Constraints Group operation	47
7.4.1.6.1	Description.....	47
7.4.1.6.2	Input parameters.....	48
7.4.1.6.3	Output parameters.....	48
7.4.1.6.4	Operation results	48
7.4.2	Virtualised Network Resources Change Notification Interface	48
7.4.2.1	Description	48
7.4.2.2	Subscribe operation	48
7.4.2.2.1	Description.....	48
7.4.2.2.2	Input parameters.....	49
7.4.2.2.3	Output parameters.....	49
7.4.2.2.4	Operation results	49
7.4.2.3	Notify operation.....	49
7.4.2.3.1	Description.....	49
7.4.3	Virtualised Network Resources Information Management Interface	50
7.4.3.1	Description	50
7.4.3.2	Subscribe operation	50

7.4.3.2.1	Description.....	50
7.4.3.2.2	Input parameters.....	50
7.4.3.2.3	Output parameters.....	50
7.4.3.2.4	Operation results.....	51
7.4.3.3	Notify operation.....	51
7.4.3.3.1	Description.....	51
7.4.3.4	Query Virtualised Network Resource Information operation.....	51
7.4.3.4.1	Description.....	51
7.4.3.4.2	Input parameters.....	51
7.4.3.4.3	Output parameters.....	51
7.4.3.4.4	Operation results.....	52
7.5	Virtualised Storage Interfaces.....	52
7.5.1	Virtualised Storage Resources Management Interface.....	52
7.5.1.1	Description	52
7.5.1.2	Allocate Virtualised Storage Resource operation.....	52
7.5.1.2.1	Description.....	52
7.5.1.2.2	Input parameters.....	52
7.5.1.2.3	Output parameters.....	53
7.5.1.2.4	Operation results.....	53
7.5.1.3	Query Virtualised Storage Resource operation	53
7.5.1.3.1	Description.....	53
7.5.1.3.2	Input parameters.....	54
7.5.1.3.3	Output parameters.....	54
7.5.1.3.4	Operation results	54
7.5.1.4	Update Virtualised Storage Resource operation.....	54
7.5.1.4.1	Description.....	54
7.5.1.4.2	Input parameters.....	54
7.5.1.4.3	Output parameters.....	55
7.5.1.4.4	Operation results	55
7.5.1.5	Terminate Virtualised Storage Resource operation.....	55
7.5.1.5.1	Description.....	55
7.5.1.5.2	Input parameters.....	56
7.5.1.5.3	Output parameters.....	56
7.5.1.5.4	Operation results	56
7.5.1.6	Operate Virtualised Storage Resource operation.....	56
7.5.1.6.1	Description.....	56
7.5.1.6.2	Input parameters.....	56
7.5.1.6.3	Output parameters.....	57
7.5.1.6.4	Operation results	57
7.5.1.7	Scale Virtualised Storage Resource operation.....	57
7.5.1.7.1	Description.....	57
7.5.1.7.2	Input parameters.....	57
7.5.1.7.3	Output parameters.....	57
7.5.1.7.4	Operation results	58
7.5.1.8	Migrate Virtualised Storage Resource operation.....	58
7.5.1.8.1	Description.....	58
7.5.1.8.2	Input parameters.....	58
7.5.1.8.3	Output parameters.....	58
7.5.1.8.4	Operation results	59
7.5.1.9	Create Virtualised Storage Resource Affinity Or AntiAffinity Constraints Group operation	59
7.5.1.9.1	Description.....	59
7.5.1.9.2	Input parameters.....	59
7.5.1.9.3	Output parameters.....	59
7.5.1.9.4	Operation results	59
7.5.2	Virtualised Storage Resources Change Notification Interface	60
7.5.2.1	Description	60
7.5.2.2	Subscribe operation	60
7.5.2.2.1	Description.....	60
7.5.2.2.2	Input parameters.....	60
7.5.2.2.3	Output parameters.....	60
7.5.2.2.4	Operation results	60
7.5.2.3	Notify operation.....	60

7.5.2.3.1	Description	60
7.5.3	Virtualised Storage Resources Information Management Interface	61
7.5.3.1	Description	61
7.5.3.2	Subscribe operation	61
7.5.3.2.1	Description	61
7.5.3.2.2	Input parameters	61
7.5.3.2.3	Output parameters	62
7.5.3.2.4	Operation results	62
7.5.3.3	Notify operation	62
7.5.3.3.1	Description	62
7.5.3.4	Query Virtualised Storage Resources Information operation	62
7.5.3.4.1	Description	62
7.5.3.4.2	Input parameters	62
7.5.3.4.3	Output parameters	63
7.5.3.4.4	Operation results	63
7.6	Virtualised Resources Fault Management Interface	63
7.6.1	Description	63
7.6.2	Subscribe operation	63
7.6.2.1	Description	63
7.6.2.2	Input parameters	64
7.6.2.3	Output parameters	64
7.6.2.4	Operation results	64
7.6.3	Notify operation	64
7.6.3.1	Description	64
7.6.4	Get Alarm List operation	65
7.6.4.1	Description	65
7.6.4.2	Input parameters	65
7.6.4.3	Output parameters	65
7.6.4.4	Operation results	65
7.7	Virtualised Resources Performance Management Interface	65
7.7.1	Description	65
7.7.2	Create PM Job operation	66
7.7.2.1	Description	66
7.7.2.2	Input parameters	66
7.7.2.3	Output parameters	67
7.7.2.4	Operation results	67
7.7.3	Query PM Job operation	67
7.7.3.1	Description	67
7.7.3.2	Input parameters	67
7.7.3.3	Output parameters	68
7.7.3.4	Operation results	68
7.7.4	Delete PM Jobs operation	68
7.7.4.1	Description	68
7.7.4.2	Input parameters	68
7.7.4.3	Output parameters	68
7.7.4.4	Operation results	68
7.7.5	Subscribe operation	69
7.7.5.1	Description	69
7.7.5.2	Input parameters	69
7.7.5.3	Output parameters	69
7.7.5.4	Operation results	69
7.7.6	Notify operation	69
7.7.6.1	Description	69
7.7.7	Create Threshold operation	70
7.7.7.1	Description	70
7.7.7.2	Input parameters	70
7.7.7.3	Output parameters	70
7.7.7.4	Operation results	70
7.7.8	Query Threshold operation	71
7.7.8.1	Description	71
7.7.8.2	Input parameters	71
7.7.8.3	Output parameters	71

7.7.8.4	Operation results.....	71
7.7.9	Delete Thresholds operation.....	71
7.7.9.1	Description	71
7.7.9.2	Input parameters	72
7.7.9.3	Output parameters	72
7.7.9.4	Operation results.....	72
7.8	Virtualised Resource Reservation Interfaces	72
7.8.1	Virtualised Compute Resources Reservation Management Interface	72
7.8.1.1	Description	72
7.8.1.2	Query Compute Resource Reservation operation.....	72
7.8.1.2.1	Description.....	72
7.8.1.2.2	Input parameters.....	72
7.8.1.2.3	Output parameters.....	73
7.8.1.2.4	Operation results	73
7.8.2	Virtualised Network Resources Reservation Management Interface	73
7.8.2.1	Description	73
7.8.2.2	Query Network Resource Reservation operation	73
7.8.2.2.1	Description.....	73
7.8.2.2.2	Input parameters.....	73
7.8.2.2.3	Output parameters.....	74
7.8.2.2.4	Operation results	74
7.8.3	Virtualised Storage Resources Reservation Management Interface	74
7.8.3.1	Description	74
7.8.3.2	Query Storage Resource Reservation operation.....	74
7.8.3.2.1	Description.....	74
7.8.3.2.2	Input parameters.....	74
7.8.3.2.3	Output parameters.....	75
7.8.3.2.4	Operation results	75
7.8.4	Virtualised Resources Reservation Change Notification Interface	75
7.8.4.1	Description	75
7.8.4.2	Subscribe operation	75
7.8.4.2.1	Description.....	75
7.8.4.2.2	Input parameters.....	75
7.8.4.2.3	Output parameters.....	76
7.8.4.2.4	Operation results	76
7.8.4.3	Notify operation.....	76
7.8.4.3.1	Description.....	76
7.9	Virtualised Resource Quota Interfaces	76
7.9.1	Virtualised Compute Resources Quota Management Interface.....	76
7.9.1.1	Description	76
7.9.1.2	Query Compute Resource Quota operation.....	77
7.9.1.2.1	Description.....	77
7.9.1.2.2	Input parameters.....	77
7.9.1.2.3	Output parameters.....	77
7.9.1.2.4	Operation results	77
7.9.2	Virtualised Network Resources Quota Management Interface	77
7.9.2.1	Description	77
7.9.2.2	Query Network Resource Quota operation.....	77
7.9.2.2.1	Description.....	77
7.9.2.2.2	Input parameters.....	78
7.9.2.2.3	Output parameters.....	78
7.9.2.2.4	Operation results	78
7.9.3	Virtualised Storage Resources Quota Management Interface	78
7.9.3.1	Description	78
7.9.3.2	Query Storage Resource operation	78
7.9.3.2.1	Description.....	78
7.9.3.2.2	Input parameters.....	79
7.9.3.2.3	Output parameters.....	79
7.9.3.2.4	Operation results	79
7.9.4	Virtualised Resources Quota Change Notification Interface.....	79
7.9.4.1	Description	79
7.9.4.2	Subscribe operation	79

7.9.4.2.1	Description.....	79
7.9.4.2.2	Input parameters.....	80
7.9.4.2.3	Output parameters.....	80
7.9.4.2.4	Operation results.....	80
7.9.4.3	Notify operation.....	80
7.9.4.3.1	Description.....	80
7.10	Policy Management Interface	81
7.10.1	Description	81
7.10.2	Transfer Policy operation.....	81
7.10.2.1	Description	81
7.10.2.2	Input parameters	81
7.10.2.3	Output parameters	81
7.10.2.4	Operation results.....	82
7.10.3	Delete Policy operation	82
7.10.3.1	Description	82
7.10.3.2	Input parameters	82
7.10.3.3	Output parameters	82
7.10.3.4	Operation results.....	82
7.10.4	Query Policy operation.....	83
7.10.4.1	Description	83
7.10.4.2	Input parameters	83
7.10.4.3	Output parameters	83
7.10.4.4	Operation results.....	83
7.10.5	Activate Policy operation	84
7.10.5.1	Description	84
7.10.5.2	Input parameters	84
7.10.5.3	Output parameters	84
7.10.5.4	Operation results.....	84
7.10.6	Deactivate Policy operation	84
7.10.6.1	Description	84
7.10.6.2	Input parameters	85
7.10.6.3	Output parameters	85
7.10.6.4	Operation results.....	85
7.10.7	Subscribe operation	85
7.10.7.1	Description	85
7.10.7.2	Input parameters	85
7.10.7.3	Output parameters	86
7.10.7.4	Operation results.....	86
7.10.8	Notify operation	86
7.10.8.1	Description	86
7.10.9	Terminate Subscription operation	86
7.10.9.1	Description	86
7.10.9.2	Input parameters	86
7.10.9.3	Output parameters	87
7.10.9.4	Operation results.....	87
7.10.10	Query Subscription Info operation	87
7.10.10.1	Description	87
7.10.10.2	Input parameters	87
7.10.10.3	Output parameters	87
7.10.10.4	Operation results.....	87
8	Information element exchanged	88
8.1	Introduction.....	88
8.2	Information elements related to software images	88
8.2.1	Introduction.....	88
8.2.2	SoftwareImageInformation information element	88
8.3	Information elements and notifications related to Consumable Virtualised Resources Information	88
8.3.1	Introduction.....	88
8.3.2	InformationChangeNotification	88
8.3.2.1	Description	88
8.3.2.2	Trigger conditions	89
8.3.2.3	Attributes	89

8.3.3	Information elements related to Virtual Compute Resource Information	89
8.3.3.1	Introduction	89
8.3.3.2	VirtualComputeResourceInformation information element	89
8.3.3.2.1	Description.....	89
8.3.3.2.2	Attributes	89
8.3.3.3	VirtualCpuResourceInformation information element	90
8.3.3.3.1	Description.....	90
8.3.3.3.2	Attributes	90
8.3.3.4	VirtualMemoryResourceInformation information element	90
8.3.3.4.1	Description.....	90
8.3.3.4.2	Attributes	90
8.3.4	VirtualStorageResourceInformation information element	91
8.3.4.1	Description	91
8.3.4.2	Attributes	91
8.3.5	VirtualNetworkResourceInformation information element	91
8.3.5.1	Description	91
8.3.5.2	Attributes	91
8.4	Information elements and notifications related to Virtualised Resources.....	92
8.4.1	Introduction	92
8.4.2	Information elements related to Virtual Compute Flavour.....	92
8.4.2.1	Introduction	92
8.4.2.2	VirtualComputeFlavour information element	92
8.4.2.2.1	Description.....	92
8.4.2.2.2	Attributes	92
8.4.2.3	VirtualCpuData information element	93
8.4.2.3.1	Description.....	93
8.4.2.3.2	Attributes	93
8.4.2.4	VirtualCpuPinningData information element format	93
8.4.2.4.1	Description.....	93
8.4.2.4.2	Attributes	93
8.4.2.5	VirtualMemoryData information element format	94
8.4.2.5.1	Description.....	94
8.4.2.5.2	Attributes	94
8.4.2.6	VirtualNetworkInterfaceData information element	94
8.4.2.6.1	Description.....	94
8.4.2.6.2	Attributes	94
8.4.3	Information elements related to Virtual Compute	95
8.4.3.1	Introduction	95
8.4.3.2	VirtualCompute information element	95
8.4.3.2.1	Description.....	95
8.4.3.2.2	Attributes	95
8.4.3.3	VirtualCpu information element format	96
8.4.3.3.1	Description.....	96
8.4.3.3.2	Attributes	96
8.4.3.4	VirtualCpuPinning information element format	96
8.4.3.4.1	Description.....	96
8.4.3.4.2	Attributes	97
8.4.3.5	VirtualMemory information element format	97
8.4.3.5.1	Description.....	97
8.4.3.5.2	Attributes	97
8.4.3.6	VirtualNetworkInterface information element	97
8.4.3.6.1	Description.....	97
8.4.3.6.2	Attributes	97
8.4.3.7	VirtualInterfaceData information element	98
8.4.3.7.1	Description.....	98
8.4.3.7.2	Attributes	98
8.4.4	Information elements related to Virtual Network Data	99
8.4.4.1	Introduction	99
8.4.4.2	VirtualNetworkData information element format	99
8.4.4.2.1	Description.....	99
8.4.4.2.2	Attributes	99
8.4.4.3	NetworkQos information element format	100

8.4.4.3.1	Description.....	100
8.4.4.3.2	Attributes	100
8.4.4.4	NetworkSubnetData information element	100
8.4.4.4.1	Description.....	100
8.4.4.4.2	Attributes	100
8.4.4.5	VirtualNetworkPortData information element	101
8.4.4.5.1	Description.....	101
8.4.4.5.2	Attributes	101
8.4.5	Information elements related to Virtual Network.....	101
8.4.5.1	Introduction	101
8.4.5.2	VirtualNetwork information element	101
8.4.5.2.1	Description.....	101
8.4.5.2.2	Attributes	101
8.4.5.3	NetworkSubnet information element.....	102
8.4.5.3.1	Description.....	102
8.4.5.3.2	Attributes	102
8.4.5.4	VirtualNetworkPort information element.....	103
8.4.5.4.1	Description.....	103
8.4.5.4.2	Attributes	103
8.4.6	Information elements related to Virtual Storage Flavour	104
8.4.6.1	Introduction	104
8.4.6.2	VirtualStorageFlavour information element	104
8.4.6.2.1	Description.....	104
8.4.6.2.2	Attributes	104
8.4.6.3	VirtualStorageData information element.....	104
8.4.6.3.1	Description.....	104
8.4.6.3.2	Attributes	104
8.4.7	Information elements related to Virtual Storage.....	105
8.4.7.1	Introduction	105
8.4.7.2	VirtualStorage information element	105
8.4.7.2.1	Description.....	105
8.4.7.2.2	Attributes	105
8.4.8	Information elements related to Affinity or AntiAffinity	106
8.4.8.1	Introduction	106
8.4.8.2	AffinityOrAntiAffinityConstraint information element	106
8.4.8.2.1	Description.....	106
8.4.8.2.2	Attributes	106
8.4.8.3	AffinityOrAntiAffinityResourceList information element	107
8.4.8.3.1	Description.....	107
8.4.8.3.2	Attributes	107
8.4.9	VirtualisedResourceChangeNotification.....	107
8.4.9.1	Description	107
8.4.9.2	Trigger conditions	107
8.4.9.3	Attributes	108
8.4.10	UserData information element	108
8.4.10.1	Description	108
8.4.10.2	Attributes	108
8.5	Information elements and notifications related to Virtualised Resources Performance Management	108
8.5.1	Introduction	108
8.5.2	ObjectSelection information element	108
8.5.2.1	Description	108
8.5.2.2	Attributes	109
8.5.3	PmJob information element	109
8.5.3.1	Description	109
8.5.3.2	Attributes	109
8.5.4	Threshold information element	110
8.5.4.1	Description	110
8.5.4.2	Attributes	110
8.5.5	PerformanceReport information element	111
8.5.5.1	Description	111
8.5.5.2	Attributes	111
8.5.6	PerformanceReportEntry information element	111

8.5.6.1	Description	111
8.5.6.2	Attributes	111
8.5.7	PerformanceValueEntry information element.....	112
8.5.7.1	Description	112
8.5.7.2	Attributes	112
8.5.8	PerformanceInformationAvailableNotification.....	112
8.5.8.1	Description	112
8.5.8.2	Trigger Conditions.....	112
8.5.8.3	Attributes	112
8.5.9	ThresholdCrossedNotification.....	113
8.5.9.1	Description	113
8.5.9.2	Trigger Condition	113
8.5.9.3	Attributes	113
8.6	Information elements and notifications related to Virtualised Resources Fault Management.....	113
8.6.1	Introduction	113
8.6.2	AlarmNotification	113
8.6.2.1	Description	113
8.6.2.2	Trigger conditions	114
8.6.2.3	Attributes	114
8.6.3	AlarmClearedNotification.....	114
8.6.3.1	Description	114
8.6.3.2	Trigger conditions	114
8.6.3.3	Attributes	114
8.6.4	Alarm information element	114
8.6.4.1	Description	114
8.6.4.2	Attributes	114
8.7	Information elements and notifications related to Reservation.....	115
8.7.1	Introduction	115
8.7.2	ReservedVirtualCompute information element.....	116
8.7.2.1	Description	116
8.7.2.2	Attributes	116
8.7.3	Information elements related to Compute Pool Reservation.....	117
8.7.3.1	Introduction	117
8.7.3.2	ReservedComputePool information element.....	117
8.7.3.2.1	Description.....	117
8.7.3.2.2	Attributes	117
8.7.3.3	ReservedVirtualComputeAttributes information element	117
8.7.3.3.1	Description.....	117
8.7.3.3.2	Attributes	117
8.7.4	Information elements related to Network reservation	118
8.7.4.1	Introduction	118
8.7.4.2	ReservedVirtualNetwork information element.....	118
8.7.4.2.1	Description.....	118
8.7.4.2.2	Attributes	118
8.7.4.3	ReservedVirtualNetworkAttributes information element	119
8.7.4.3.1	Description.....	119
8.7.4.3.2	Attributes	119
8.7.4.4	ReservedVirtualNetworkPort information element	119
8.7.4.4.1	Description.....	119
8.7.4.4.2	Attributes	119
8.7.5	Information elements related to Virtualisation Container Reservation	120
8.7.5.1	Introduction	120
8.7.5.2	ReservedVirtualizationContainer information element	120
8.7.5.2.1	Description.....	120
8.7.5.2.2	Attributes	120
8.7.6	Information elements related to Storage reservation	120
8.7.6.1	Introduction	120
8.7.6.2	ReservedVirtualStorage information element	121
8.7.6.2.1	Description.....	121
8.7.6.2.2	Attributes	121
8.7.6.3	ReservedStoragePool information element	121
8.7.6.3.1	Description.....	121

8.7.6.3.2	Attributes	121
8.7.7	VirtualisedResourceReservationChangeNotification	122
8.7.7.1	Description	122
8.7.7.2	Trigger conditions	122
8.7.7.3	Attributes	122
8.8	Information elements and notifications related to Quota	122
8.8.1	Introduction	122
8.8.2	Information elements related to Compute Quota	122
8.8.2.1	Introduction	122
8.8.2.2	VirtualComputeQuota information element	122
8.8.2.2.1	Description.....	122
8.8.2.2.2	Attributes	122
8.8.3	Information elements related to Network Quota	123
8.8.3.1	Introduction	123
8.8.3.2	VirtualNetworkQuota information element.....	123
8.8.3.2.1	Description.....	123
8.8.3.2.2	Attributes	123
8.8.4	Information elements related to Storage Quota	123
8.8.4.1	Introduction	123
8.8.4.2	VirtualStorageQuota information element.....	124
8.8.4.2.1	Description.....	124
8.8.4.2.2	Attributes	124
8.8.5	VirtualisedResourceQuotaChangeNotification	124
8.8.5.1	Description	124
8.8.5.2	Trigger conditions	124
8.8.5.3	Attributes	124
8.9	Information elements and notifications related to Policy Management.....	125
8.9.1	Introduction	125
8.9.2	Information elements related to Policy Management Operations	125
8.9.2.1	Introduction	125
8.9.2.2	PolicyInfo information element.....	125
8.9.2.2.1	Description.....	125
8.9.2.2.2	Attributes	125
8.9.3	PolicyChangeNotification	125
8.9.3.1	Description	125
8.9.3.2	Trigger Conditions.....	125
8.9.3.3	Attributes	125
8.9.4	PolicyConflictNotification	125
8.9.4.1	Description	125
8.9.4.2	Trigger Conditions.....	126
8.9.4.3	Attributes	126
Annex A (informative):	Bibliography.....	127
Annex B (informative):	Authors & contributors.....	128
Annex C (informative):	Change History	130
History		131