ETSI GR NFV 003 V1.5.1 (2020-01)

GROUP REPORT

**Network Functions Virtualisation (NFV);
Terminology for Main Concepts in NFV**

Disclaimer

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 prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

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.

Executive summary

The present document collects selected definitions and abbreviations from different NFV specifications in order to provide a common reference and facilitate shared understanding.

Introduction

ETSI NFV has produced a number of specifications over the years since its creation. According to ETSI rules, each of these specifications contains its own definitions and abbreviations clause. The present document was created to host definitions and abbreviations that are thought to be common to NFV documents to constitute a single source and facilitate common references.

1   Scope

The present document provides terms and definitions for conceptual entities within the scope of the ISG NFV, in order to achieve a "common language" across all the ISG NFV working groups.

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 Directives: Annex 1: "Definitions in relation to the member categories of ETSI".

[i.2]   ETSI TR 121 905: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Vocabulary for 3GPP Specifications (3GPP TR 21.905)".

[i.3]   IETF RFC 2330: "Framework for IP Performance Metrics".

[i.4]   IETF RFC 6390: "Guidelines for Considering New Performance Metric Development".

[i.5]   ISO/IEC 15939:2007: "Systems and software engineering -- Measurement process".

[i.6]   NIST Special Publication 500-307: "Cloud Computing Service Metrics Description".

NOTE: Available at http://www.nist.gov/itl/cloud/upload/RATAX-CloudServiceMetricsDescription-DRAFT-20141111.pdf.

[i.7]   Recommendation ITU-T Y.3500: "Information technology - Cloud computing - Overview and vocabulary".

[i.8]   ETSI GS NFV-MAN 001: "Network Functions Virtualisation (NFV); Management and Orchestration".

[i.9]   Recommendation ITU-T E.800 (2008): "Terms and definitions related to quality of service and network performance including dependability".

[i.10]   Void.

[i.11]   NIST Special Publication 800-146: "Cloud Computing Synopsis and Recommendations", 2012.

NOTE: Available at https://nvlpubs.nist.gov/nistpubs/legacy/sp/nistspecialpublication800-146.pdf.

3   Definition of terms, symbols and abbreviations

3.1   Terms

0-9

Void.

A to B

administrative domain: collection of systems and networks operated by a single organization or administrative authority

>   NOTE: The components which make up the domain are assumed to interoperate with a significant degree of
>   mutual trust among them based on a stable trust relationship, while a transient, specific trust relationship
>   is established for interoperating with components in other domains.

affinity of virtualised network resources: persistent policy that forces Virtual Links (VLs) to share the same physical connectivity

>   NOTE 1:   "Persistent" is used here and in the following definitions to indicate that the affinity remains in effect until
>   a change is requested by the consumer.

>   NOTE 2:   This may be stipulated to ensure the same transmission characteristics (such as delay) for VLs.

allocate virtualised resource: operation that creates an instance of a virtualised resource, involving the assignment of NFVI resources

>   NOTE 1:   Virtualised resources can include virtualised compute resources, virtualised network resources or
>   virtualised storage resources.

>   NOTE 2:   Throughout the present document the term "instantiated virtualised resource" is used to describe an
>   instance of a virtualised resource.

anti-affinity of virtualised network resources: persistent policy that forces Virtual Links (VLs) to not share any physical connectivity

>   NOTE: This may be stipulated to ensure that VLs do not fail at the same time.

area affinity: policy that qualifies an affinity (or anti-affinity) policy with respect to location restrictions

>   NOTE: Anti-affinity can be used to support availability, survivability and performance needs with respect to
>   virtualised resources.

>   EXAMPLE: The anti-affinity policy of having virtualised compute resources on different compute nodes can be
>   further restricted by mandating to locate the compute nodes on different shelves, racks, bays, sites,
>   geographic areas or similar restriction.

C

Central Processing Unit (CPU): device in the compute node that provides the primary container interface

Composite Network Service (CNS): network service containing at least one network service

compute domain: domain within the NFVI that includes servers and storage

compute node: abstract definition of a server

consumable virtualised resource: virtualised resource that can be requested for reservation and/or allocation

NOTE: Virtualised resources comprise compute, network and storage.

EXAMPLE: A volume or object based virtual storage.

consumer: role played by a functional block that consumes certain functions exposed by another functional block

consumer VNF: VNF that consumes services

container image registry: function that stores container images and makes them available to other functions

NOTE: No assumption is made on the location of such a function.

container infrastructure service: service that provides runtime environment for one or more container virtualisation technologies

NOTE: Container infrastructure service can run on top of a bare metal or hypervisor-based virtualisation.

container infrastructure service instance: instance providing runtime execution environment for container

container infrastructure service management: function that manages one or more container infrastructure services

NOTE: The container infrastructure service management provides mechanisms for lifecycle management of the containers, which are hosting application components as services or functions.

D

deployment flavour: template that describes a specific deployment (of a Network Service or VNF) supporting specific KPIs (such as capacity and performance)

E

error: discrepancy between a computed, observed, or measured value or condition and a true, specified, or theoretically correct value or condition

NOTE 1: Error is a consequence of a fault.

NOTE 2: See ETSI GS NFV-MAN 001 [i.8].

F

fault: adjudged or hypothesized cause of an error

NOTE: See Recommendation ITU-T E.800 [i.9].

fault detection: process of identifying an undesirable condition (fault or symptom) that may lead to the loss of service from the system or device

fault diagnosis: high confidence level determination of the required repair actions for the components that are suspected to be faulty

NOTE: Diagnosis actions are generally taken while the component being diagnosed is out of service.

fault isolation: isolation of the failed component(s) from the system

NOTE: The objectives of fault isolation include avoidance of fault propagation to the redundant components and/or simultaneous un-intended activation of active and backup components in the context of active-standby redundancy configurations (i.e. "split-brain" avoidance).

fault localization: determining the component that led to the service failure and its location

fault management notification: notification about an event pertaining to fault management

EXAMPLE: Fault management notifications include notifications of fault detection events, entity availability state changes, and fault management phase related state progression events.

fault remediation: restoration of the service availability and/or continuity after occurrence of a fault

field replaceable unit: unit of hardware resources designed for easy replacement during the operational life of a network element

G

Void.

H

hypervisor: software which partitions the underlying physical resources, creates Virtual Machines, and isolates them from each other

NOTE: The hypervisor is software running either directly on top of the hardware (bare metal hypervisor) or running on top of a hosting operating system (hosted hypervisor). The abstraction of resources comprises all those entities inside a computer/server which are accessible, like processor, memory/storage, NICs.

I

infrastructure domain: administrative domain that provides virtualised infrastructure resources such as compute, network, and storage or a composition of those resources via a service abstraction to another Administrative Domain, and is responsible for the management and orchestration of those resources

NOTE: This definition is from ETSI GS NFV-MAN 001 [i.8].

infrastructure network domain: domain within the NFVI that includes all networking that interconnects compute/storage infrastructure

NOTE: It pre-exists the realization of VNFs.

infrastructure resource: resource provided by the infrastructure that can be used by virtualisation containers

NOTE: Infrastructure resource can either be a virtualised compute, storage, or network resource.

infrastructure resource group: logical resource collection grouping virtual resource instances assigned to a tenant along with software images

J to K

Void.

L

lifecycle management: set of functions required to manage the instantiation, maintenance and termination of a VNF or NS

M

managed container infrastructure object: object managed and exposed by the container infrastructure service management, representing the desired and actual state of a containerized workload, including its requested and allocated infrastructure resources and applicable policies

managed container infrastructure object package: aggregate of declarative descriptor and configuration files for multiple managed container infrastructure objects

measurement: set of operations having the object of determining a measured value or measurement result

NOTE: The actual instance or execution of operations leading to a Measured Value. (Based on the definition of Measurement in ISO/IEC 15939 [i.5], as cited in NIST Special Publication 500-307 [i.6]).

metric: standard definition of a quantity, produced in an assessment of performance and/or reliability of the network, which has an intended utility and is carefully specified to convey the exact meaning of a measured value

NOTE: This definition is consistent with that of Performance Metric in IETF RFC 2330 [i.3] and IETF RFC 6390 [i.4].

EXAMPLE: Packet transfer performance or reliability of a network.

multi-site network service: network service whose constituent Network Functions/NSs are deployed in more than one site

multi-tenancy: feature where physical, virtual or service resources are allocated in such a way that multiple tenants and their computations and data are isolated from and inaccessible by each another

NOTE: This definition has been specialized from the term "multi-tenancy" as defined in Recommendation ITU-T Y.3500 [i.7].

N

Nested Network Service (NNS): network service that is part of a composite network service

NOTE: A Composite Network Service is a Network Service containing at least one Network Service.

network controller: functional block that centralizes some or all of the control and management functionality of a network domain and may provide an abstract view of its domain to other functional blocks via well-defined interfaces

network forwarding path: ordered list of connection points forming a chain of NFs, along with policies associated to the list

Network Function (NF): functional block within a network infrastructure that has well-defined external interfaces and well-defined functional behaviour

NOTE: In practical terms, a Network Function is today often a network node or physical appliance.

Network Functions Virtualisation (NFV): principle of separating network functions from the hardware they run on by using virtual hardware abstraction

Network Functions Virtualisation Infrastructure (NFVI): totality of all hardware and software components that build up the environment in which VNFs are deployed

NOTE: The NFV-Infrastructure can span across several locations, e.g. places where data centres are operated. The network providing connectivity between these locations is regarded to be part of the NFV-Infrastructure. NFV-Infrastructure and VNF are the top-level conceptual entities in the scope of Network Function Virtualisation. All other components are sub-entities of these two main entities.

Network Functions Virtualisation Infrastructure (NFVI) components: NFVI hardware resources that are not field replaceable, but are distinguishable as COTS components at manufacturing time

Network Functions Virtualisation Infrastructure Node (NFVI-Node): physical device[s] deployed and managed as a single entity, providing the NFVI Functions required to support the execution environment for VNFs

Network Function Virtualisation Infrastructure Point of Presence (NFVI-PoP): N-PoP where a Network Function is or could be deployed as Virtual Network Function (VNF)

Network Functions Virtualisation Management and Orchestration (NFV-MANO): functions collectively provided by NFVO, VNFM, and VIM