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

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Contents

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Foreword

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

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

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.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

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

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

2.2 Informative references

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.

Not applicable.

3 Terms and definitions

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Network Function (NF): A functional building block within a network infrastructure, which has well-defined external interfaces and a well-defined functional behaviour. In practical terms, a Network Function is today often a network node or physical appliance.

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

Network Operator: As defined in [1]: A Network Operator is defined as an operator of an electronics communications network or part thereof. An association or organization of such network operators also falls within this category.

Network Point of Presence (N-PoP): A location where a Network Function is implemented as either a Physical Network Function (PNF) or a Virtual Network Function (VNF).

Network Service: A composition of Network Functions and defined by its functional and behavioural specification.

NOTE: The Network Service contributes to the behaviour of the higher layer service, which is characterized by at least performance, dependability, and security specifications. The end-to-end network service behaviour is the result of the combination of the individual network function behaviours as well as the behaviours of the network infrastructure composition mechanism.

Network Service Provider: A type of Service Provider implementing the Network Service.

Network Stability: The ability of the NFV framework to maintain steadfastness while providing its function and resume its designated behaviour as soon as possible under difficult conditions, which can be excessive load or other anomalies not exceeding the design limits.

NF Forwarding Graph: A graph of logical links connecting NF nodes for the purpose of describing traffic flow between these network functions.

NF Set: A collection of NFs with unspecified connectivity between them.

NFV Framework: The totality of all entities, reference points, information models and other constructs defined by the specifications published by the ETSI ISG NFV.

NFV Infrastructure (NFVI): The NFV-Infrastructure is the totality of all hardware and software components which build up the environment in which VNFs are deployed. The NFV-Infrastructure can span across several locations, i.e. multiple N-PoPs. The network providing connectivity between these locations is regarded to be part of the NFV-Infrastructure.

NFV Orchestrator: The NFV Orchestrator is in charge of the network wide orchestration and management of NFV (infrastructure and software) resources, and realizing NFV service topology on the NFVI.

NOTE: The NFV Orchestrator operates, manages and automates the distributed NFV Infrastructure. The NFV Orchestrator has control and visibility of all VNFs running inside the NFVI. The NFV Orchestrator provides GUI and external NFV-Interfaces to the outside world to interact with the orchestration software. The NFV Orchestrator makes extensive use of the NFV-Operating System to perform cloud operation and automation, thus extends the basic capabilities of the NFV-Operating System and provides much richer environment.

NFV-Resource (NFV-Res): NFV-Resources do exist inside the NFV-Infra and can be used by the VNF/VNSF to allow for their proper execution.

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Physical Network Function (PNF): An implementation of a NF via a tightly coupled software and hardware system.

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Resiliency: The ability of the NFV framework to limit disruption and return to normal or at a minimum acceptable service delivery level in the face of a fault, failure, or an event that disrupts the normal operation.

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Scaling: Ability to dynamically extend/reduce resources granted to the Virtual Network Function (VNF) as needed. This includes scaling up/down and scaling out/in.

Scaling Out/In: The ability to scale by add/remove resource instances (e.g. VM).

Scaling Up/Down: The ability to scale by changing allocated resource, e.g. increase/decrease memory, CPU capacity or storage size.

Service: A component of the portfolio of choices offered by service providers to a user, a functionality offered to a user, as defined in TR 121 905 [2]. A user may be an end-customer, a network or some intermediate entity.

Service Continuity: The continuous delivery of service in conformance with service's functional and behavioural specification and SLA requirements, both in the control and data planes, for any initiated transaction or session till its full completion even in the events of intervening exceptions or anomalies, whether scheduled or unscheduled, malicious, intentional or unintentional.

NOTE 1: From an end-user perspective, service continuity implies continuation of ongoing communication sessions with multiple media traversing different network domains (access, aggregation and core network) or different user equipment.

NOTE 2: End to end service continuity requires that the service is delivered with service quality defined by an SLA. This is true regardless if the service is delivered via a non-virtual network, virtual network or a combination.

Service Level Agreement (SLA): A negotiated agreement between two or more parties, recording a common understanding about the service and/or service behaviour (e.g. availability, performance, service continuity, responsiveness to anomalies, security, serviceability, operation) offered by one party to another, and the measurable target values characterizing the level of services.

NOTE: The scope of the above definition does not include business aspects of the SLA.

Service Provider: As defined in [1]: A Service Provider is defined as a company or organization, making use of an electronics communications network or part thereof to provide a service or services on a commercial basis to third parties.

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User Service: A component of the portfolio of choices offered by service providers to the end-users/customers/subscribers.

V

Virtual Application (VA): A Virtual Application is the more general term for a piece of software which can be loaded into a Virtual Machine. A VNF is one type of VA.

Virtualised Network Function (VNF): An implementation of an NF that can be deployed on a Network Function Virtualisation Infrastructure (NFVI).

VNF Forwarding Graph (VNF FG): A NF forwarding graph where at least one node is a VNF.

VNF Set: A collection of VNFs with unspecified connectivity between them.

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4 Abbreviations

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NF	Network Function
NFVI	NFV Infrastructure
NFVI-PoP	Network Function Virtualisation Infrastructure Point of Presence
NFV-Res	NFV Resource
N-PoP	Network Point of Presence

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PNF	Physical Network Function
PNF	Physical Network Function
PoP	Point of Presence

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SLA	Service Level Agreement

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VA	Virtual Application
VNF FG	VNF Forwarding Graph
VNF	Virtualised Network Function

W to Z

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History

Document history		
V1.1.1	October 2013	Publication