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Zero-touch network and Service Management (ZSM); Terminology for concepts in ZSM

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Reference

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Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) Zero touch network and Service Management (ZSM).

Modal verbs terminology

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1 Scope

The present document provides a glossary of terms and concepts related to Zero touch network and Service Management (ZSM) with the goal to achieve a common language across all the ETSI ISG ZSM deliverables and to serve as terminology reference for use across the industry. Where necessary, verbose descriptions providing background for formal concise definitions will be documented.

2 References

2.1 Normative 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.

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[i.1] MEF Reference Wiki.

NOTE: Available at https://wiki.mef.net/display/CESG/MEF+Reference+Wiki.

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

[i.3] ETSI GS ZSM 002: "Zero-touch network and Service Management (ZSM); Reference Architecture".

3 Definition of terms, symbols and definitions

3.1 Terms

For the purposes of the present document, the following terms apply:

artificial intelligence: algorithms that are capable of human-like traits, e.g. knowledge representation, reasoning, planning, learning, and acting, and decides on actions to be taken that maximizes the chances of achieving a target goal

authorized consumer: service consumer, inside or outside a given management domain, that is allowed to use the offered services

cross-domain data services: services that allow to share data with authorized consumers across management domains

data governance: processes to define and enforce access restrictions to data, and to attach related metadata to the data

End-to-End Service (E2ES): CFS composed from RFSs and/or CFSs originating from one or multiple domains

E2E service management domain: management domain specialized to manage E2E services

external visibility: property of a ZSM service that indicates whether the scope of the service consumption spans outside the management domain

NOTE: Conventions for external visibility are defined in clause 3.4 of ETSI GS ZSM 002 [i.3].

federated orchestration: orchestration performed by multiple autonomous management domains

NOTE: Autonomous domains in this context is related to independent (or self-regulating), not to be confused with the degree of automation.

hierarchical orchestration: orchestration decomposed into one or more hierarchical interactions where parts of the service are delegated to a subordinate orchestrator

integration fabric: management function that plays both the roles of service consumer and service producer and which facilitates the interoperation and communication between management functions

intent-based interface: interface to phrase the consumer request(s) of what is required in a declarative form

key performance indicator: measurement of a specific aspect of the performance of a service that can be used in a service level objective

machine intelligence: algorithms that leverage artificial intelligence and machine learning to enable autonomic (zero-touch) network and service management

machine learning: algorithms that can "learn" from data and improve the ability of executing a target goal, mainly based on recognizing patterns in historical and/or operational data and applying the recognized patterns to new input data

machine learning sandbox: synthetic environment that is isolated from production environment where network behaviour is represented, and machine learning algorithms can safely execute and use real and/or synthetic data

managed entity: managed resource or managed service

NOTE: Examples of managed entities are infrastructure resources, such as Virtual Network Functions (VNF), physical network functions (PNF), and services such as cloud services, NFV network services, CFSs, RFSs.

managed resource: resource that is managed by one or more ZSM services

managed service: service that is managed by one or more ZSM services

management domain: scope of management that federates together management services, that enables their exposure towards external service consumers and that is delineated by a business, administrative, technological or other boundary

management function: logical entity playing the roles of service consumer and/or service producer

management service: See "ZSM service".

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 (ETSI GS NFV 003 [i.2]).

Network Service (NS): composition of network function(s) and/or network service(s), defined by its functional and behavioural specification (https://wiki.mef.net/display/CESG/Service)

self-configuration: process by which an entity automatically configures itself, without human direct intervention

self-optimization: process by which an entity autonomously and continuously optimizes itself by adapting to the environment

self-healing: process by which an entity perceives that it is not operating correctly and makes the necessary adjustments to restore itself to normality, without human intervention

self-monitoring: process by which an entity monitors its own behaviour

self-scaling: process by which an entity is able to automatically add and/or remove resources or instances

service capability: specific part of a ZSM service

NOTE: Examples of service capabilities are defined in the sub-clauses "Provided management services" of clauses 6.3, 6.4, 6.5 and 6.6 of ETSI GS ZSM 002 [i.3].

service consumer: role of an entity consuming one or more ZSM services

service end-point: interface through which service capabilities are offered and consumed

service level agreement: part of a business agreement between a service provider and a customer, specifying the committed service quality and quantity in terms of service level specifications, and the associated consequences in case the service level objectives are not met

service level objective: element in a service level specification that is defined in terms of parameters, and related metrics, thresholds and tolerances associated with the parameters

service level specification: specification of the minimum acceptable standard of service

service producer: role of an entity offering one or more ZSM services

ZSM framework: set of services that together provide capabilities for the automatic network and service management

ZSM framework consumer: entity outside the ZSM framework that uses one or several of the management capabilities offered by the ZSM framework

NOTE 1: ZSM framework consumers may be non-human entities (e.g. digital store fronts, web portals, BSS components, other ZSM framework instances) or human users.

NOTE 2: ZSM services offer machine consumable interfaces. They may also allow interfacing with human users using e.g. a GUI, web portal or application.

ZSM framework owner: (business) entity that owns the ZSM framework and the rights to operate it

NOTE: As entity, the ZSM framework owner is non-human, but it "employs" humans for different tasks.

EXAMPLE: An operator company that bought, rents or leases the ZSM framework.

ZSM framework provider: entity that the ZSM framework uses to manage networks and (telecommunication) services

NOTE: These entities are non-human (i.e. SW modules, HW components, systems of SW and HW), but may require human actions for different tasks.

ZSM framework vendor: (business) entity that supplies SW and/or HW components for the ZSM framework and/or one or more ZSM framework provider

NOTE 1: As entity, the ZSM framework vendor is non-human, but it "employs" humans for different tasks.

NOTE 2: ZSM framework vendors may be commercial business entities or non-commercial organizations.

ZSM service: set of offered management capabilities

NOTE: The terms "ZSM service" and "management service" are used interchangeably.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3GPP	3rd Generation Partnership Project
5G	5th Generation cellular network technology
5GC	5G Core
AI	Artificial Intelligence
AMF	Access and Mobility management Function
API	Application Programming Interface
AR	Augmented Reality
BBU	BaseBand Unit
BSS	Business Support System
CD	Continuous Delivery
CDS	Cross-domain Data Services
CFS	Customer Facing Service
CI	Continuous Integration
CPU	Central Processing Unit
CSP	Communication Service Provider
DCN	Data Center Network
DN	Data Network
E2E	End-to-End
E2ES	End-to-End Service
EMS	Element Management System
EP	End-Point
ETSI	European Telecommunications Standards Institute
FCAPS	Fault, Configuration, Accounting, Performance and Security
FM	Fault Management
GDPR	General Data Protection Regulation
GPRS	General Packet Radio Service
GR	Group Report
GS	Group Specification
GUI	Graphical User Interface
IEEE	Institute of Electrical and Electronics Engineers
IF	Integration Fabric
IFA	InterFaces and Architecture
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPR	Intellectual Property Rights
IP-SEC	Internet Protocol SECurity
ISG	Industry Specification Group
IT	Information Technology
KPI	Key Performance Indicator
LCM	Life Cycle Management
LI	Lawful Intercept
LTE	Long Term Evolution
MANO	MANagement and Orchestration
MAPE-K	Monitor-Analyse -Plan-Execute plus Knowledge
MD	Management Domain
MF	Management Function
MI	Machine Intelligence
ML	Machine Learning
MLaaS	Machine Learning as a Service
MRACL	Model-Reference Adaptive Control Loop
NaaS	Network as a Service
NBI	NorthBound Interface
NF	Network Function

NFV	Network Functions Virtualisation
NFVI	NFV Infrastructure
NFVIa	aSNFVI as a Service
NFVO	NFV Orchestrator
NG	Next Generation
NG-RAN	Next-Generation RAN
NIST	National Institute of Standards and Technology
NS	Network Service
NSSI	Network Slice Subnet Instance
NSaaS	Network Slice as a Service
NW	NetWork
OLA	Operational Level Agreement
ONAP	Open Network Automation Platform
OODA	Observe, Orient, Decide, Act
OPEX	OPerating EXpenditure
OS	Operating System
OSS	Operations Support System
PAP	Policy Administration Point
PDN	Packet Data Network
PF	Policy Function
PM	Performance Management
PNF	Physical Network Function
RAN	Radio Access Network
REST	REpresentational State Transfer
RFS	Resource Facing Service
RL	Reinforcement Learning
SBI	SouthBound Interface
SDN	Software-Defined Network
SDO	Standards Development Organization
SLA	Service Level Agreement
SLO	Service Level Objective
SLS	Service Level Specification
SNMP	Simple Network Management Protocol
SW	SoftWare
TCO	Total Cost of Ownership
TS	Technical Specification
TTM	Time To Market
UE	User Equipment
URLLC	Ultra Reliable Low Latency Communication
VIM	Virtualised Infrastructure Manager
VLAN	Virtualised Local Area Network
VNF	Virtualised Network Function
VNFM	VNF Manager
VPN	Virtual Private Network
VR	Virtual Reality
WAN	Wide Area Network
WG	Working Group
XaaS	X-as-a-Service
ZSM	Zero-touch network and Service Management
eMBB	enhanced Mobile BroadBand
gNB	next Generation NodeB
mIoT	massive Internet of Things
vEPG	Virtualised Evolved Packet Gateway
vMME	Virtualised Mobility Management Entity
vPGW	Virtualised PDN Gateway
vSGSN	Virtualised Serving GPRS Support Node