



## Next Generation Protocols (NGP); Scenario Definitions

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**Keywords**

core network, cyber security, IoT, mobility,  
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case

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

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Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
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# Modal verbs terminology

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# 1 Scope

The scope of the present document is to specify the minimum set of key scenarios for the Next Generation Protocols (NGP), Industry Specific Group (ISG).

## 2 References

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- [1] NGMN: "5G Whitepaper".

NOTE: Available at

[https://www.ngmn.org/fileadmin/ngmn/content/downloads/Technical/2015/NGMN\\_5G\\_White\\_Paper\\_V1\\_0.pdf](https://www.ngmn.org/fileadmin/ngmn/content/downloads/Technical/2015/NGMN_5G_White_Paper_V1_0.pdf).

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[i.1] 3GPP TR 22.891: "3<sup>rd</sup> Generation Partnership Project; Technical Specification Group Services and System Aspects; Feasibility Study on New Services and Markets Technology Enablers; Stage 1".

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## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms applying to scenarios that include mobile network architectures given in ETSI TR 121 905 [i.3] and 3GPP TR 23.799 [i.2] and the following apply:

**access point:** point of access to a network, which in this generic NGP context may be a traditional Wi-Fi access point, 3GPP cellular network base station, RRU supporting a cell or sector or part thereof if the cell is configured as a multi-point access cell

**address:** identifier for a specific termination point and is used for routing to this termination point

NOTE: See Recommendation ITU-T Y.2091 [2].

**application process:** instantiation of a program executing in a processing system intended to accomplish some purpose

NOTE: An application contains one or more application protocol machines.

**application process name:** name of an application process

**application protocol:** protocol characterized by modifying state external to the protocol by performing remote operations on an object model

NOTE: The minimal set of operations are create/delete, start/stop and read/write.

**application protocol name:** name of an application protocol

**asymmetric link:** link with transmission characteristics which are different depending upon the relative position or design characteristics of the transmitter and the receiver of data on the link

NOTE: For instance, the range of one transmitter may be much higher than the range of another transmitter on the same medium see IETF RFC 3753 [12].

**autonomous:** entity capable of piloting itself based on sensory input and pre-defined behaviours, including collision avoidance, speed limits and geographical constraints

NOTE 1: Used in the context of communications pertaining to an autonomous drone or vehicle in the present document.

NOTE 2: However, a remote piloting capability may be provided via a network to which the vehicle is able to communicate with.

**autonomous drone:** autonomous vehicle with no human operator on-board

NOTE: The distinction between a 'drone' and an 'autonomous drone' is that in the case of an 'autonomous drone', the vehicle is piloted through on-board sensor processing, and optionally, and less frequently remote control 'managed by' a human operator. Where: the term 'managed by' indicates that the human operator may be actively monitoring the vehicle's progress, and taking control manually on an event triggered basis, as necessary; or delegating the remote control to a computing process.

**autonomous vehicle:** vehicle capable of piloting itself, that also has a human operator on-board

NOTE 1: The distinction between an 'autonomous vehicle' and an 'autonomous drone' is the presence of a human operator in the vehicle.

NOTE 2: The 'autonomous vehicle' is piloted through a combination of on-vehicle sensor readings, which are processed to determine action, and optional interjection from a human operator. An example of this kind of situation is when there is a 'self-driving car' with a human passenger on-board who is capable of piloting the car.

**backhaul:** transmission system between a base station entity and the cellular core network or Non-Access Stratum

**binding a name to an object:** function,  $F_n(M_{NS})$ , that defines the mapping of elements of  $NS$ (namespace) to elements of  $M$ (object)

NOTE 1: The result of this function is called a *binding*. e.g. In LISP, the binding operation is called mapping.

NOTE 2: For example,  $\langle ID1, RLOC1 \rangle$  is the mapping of  $ID1="identity1"$  to  $RLOC1="an\ ip\ address\ or\ any\ other\ form\ of\ addressing"$ .

**care-of-address:** IP address associated with a mobile node while visiting a foreign link; the subnet prefix of this IP address is a foreign subnet prefix

NOTE: A packet addressed to the mobile node which arrives at the mobile node's home network when the mobile node is away from home and has registered a Care-of Address will be forwarded to that address by the Home Agent in the home network see IETF RFC 3753 [12].

**centralized mobility management:** makes use of centrally deployed mobility anchors

NOTE: Please see IETF RFC 7333 [13].

**compound connection:** connection that includes logical connectivity to more than one access network at a time

**congestion avoidance:** mechanism that operates the network at the knee of the congestion or response time (or delay) curve to optimize the trade-off between response time and throughput

**congestion 'cliff':** congestion point of the response time (or delay) curve at which a session collapses

**congestion control:** control scheme that manages packet congestion, by constantly testing the congestion level that causes the network communications to collapse and responds by introducing packet loss to reduce the load during periods of congestion so that the network can recover to an uncongested state

NOTE 1: The congestion level that causes the network to collapse is often referred to as the 'congestion cliff' because the curve of throughput versus load, becomes very steep beyond this congestion level.

NOTE 2: Addresses the "social" problem of having various logical links in a network cooperate in order to avoid and/ or recover from congestion of the intermediate nodes that they share.

**congestion 'knee':** congestion point of the response time (or delay) curve at which as session begins to notably deteriorate

**connected vehicle:** vehicle connected to one or more communications networks and piloted by a human operator

NOTE 1: The network will allow the vehicle to share data with other connected vehicles and remote servers.

NOTE 2: A Connected vehicle does not need to be autonomous, but is network connected for purposes of assisted navigation, environmental updates, vehicle analysis, infotainment etc.

**connection:** shared state between EFCPM-instances

NOTE: See ISO/IEC 7498-1 [6].

**C-RAN:** Cloud RAN where the physical radio part of a base station termed the RRU has been remoted from its base band equipment termed the BBU via 'fronthaul' transmission and the BBU part connects the composite RAN equipment to the cellular core via 'backhaul'

NOTE: Often multiple RRU communicate with a single BBU to effect RAN optimization at the BBU level across a number of Cells provided by the RRH.

**data transfer protocol, machine dtp(m):** half of the EFCP that performs tightly bound mechanisms, such as ordering, and fragmentation/reassembly

NOTE: One instantiation is created for each flow allocated, see ISO/IEC 7498-1 [6].