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TECHNICAL SPECIFICATION

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Universal Mobile Telecommunications System (UMTS);  
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# Foreword

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# Introduction

The response to emergency situations (e.g., floods, hurricanes, earthquakes, terrorist attacks) depends on the communication capabilities of public networks. In most cases, emergency responders use private radio systems to aid in the logistics of providing critically needed restoration services. However, certain government and emergency management officials and other authorised users have to rely on public network services when the communication capability of the serving network may be impaired, for example due to congestion or partial network infrastructure outages, perhaps due to a direct or indirect result of the emergency situation.

Multimedia Priority Service, supported by the 3GPP system set of services and features, is one element creating the ability to deliver calls or complete sessions of a high priority nature from mobile to mobile networks, mobile to fixed networks, and fixed to mobile networks.

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# 1 Scope

The present document specifies the service requirements for Multimedia Priority Service (MPS).

The scope of this document is to specify those requirements of MPS necessary to provide an end-to-end service and to interwork with external networks where needed. Service interactions with external networks are considered within the scope of this document although these interactions may be specified in other standards.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TR 22.952: "Priority Service Guide".
- [3] 3GPP TS 22.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 1".
- [4] 3GPP TS 23.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 2".
- [5] 3GPP TS 24.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 3".
- [6] 3GPP TS 22.011: "Service accessibility".
- [7] 3GPP TS 22.261: "Service requirements for next generation new services and markets".

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# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

**MPS session:** A session for which priority treatment is applied for allocating and maintaining radio and network resources.

**MPS-subscribed UE:** A UE having MPS subscription.

**Priority Treatment:** Refers to mechanisms and features that increase the success rate for MPS session invocation, establishment and maintenance until release.

**Service User:** An individual authorized to use MPS and who has been granted a user priority level assignment by a regional/national authority (i.e., an agency authorised to issue priority assignments), and has a subscription to a mobile network operator that supports the MPS feature.

NOTE A Service User is not always restricted to a human user of the service (e.g., in the case of IoT, it could be a specialized application using MPS through machine interactions that may not directly involve a human Service User).

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

<b>DTS</b>	Data Transport Service
<b>MMTEL</b>	Multimedia Telephony
<b>MPS</b>	Multimedia Priority Service
<b>OTT</b>	Over-The-Top
<b>PIN</b>	Personal Identification Number
<b>VPN</b>	Virtual Private Network

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## 4 General description

MPS is applicable in EPS and 5GS systems.

MPS provides priority treatment to increase the probability of an authorized Service User's Voice, Video, Data and Messaging communication being successful. Some form of priority treatment is applied to the MPS invocation and session establishment, and continues to be applied until the MPS session is released. The priority treatment may be applied before the invocation if a greater probability of success in receiving, recognizing, and processing the invocation is needed.

MPS allows qualified and authorized users to obtain priority access to the next available radio channel on a priority basis before other PLMN users, during situations when PLMN congestion is blocking session establishment attempts. In addition, MPS supports priority sessions on an "end-to-end" priority basis.

MPS is intended to be utilised for Voice, Video, Messaging and Data bearer services, including the Data Transport Service, in the Packet-switched (PS) domain and the IP Multimedia Subsystem (IMS). It also involves priority transitioning of MPS service (e.g., Voice) to the CS domain when the network does not support the requested service in the PS domain. MPS sessions for Voice, Video, Data, and Messaging are based on providing priority treatment to the corresponding commercial services offered to the public.

MPS is also intended to be utilized for IoT communications through machine interactions that may not directly involve a human Service User.

MPS includes network functions that fall into the following broad categories:

**Service Invocation:** The process to recognize and identify a request for an MPS session. An MPS Service Provider network recognizes an MPS invocation based on the presence of an MPS-unique identifier entered by the originating Service User in the service request received by the network from the UE, or based on the subscription profile of the originating UE, or as a regional/operator option the subscription profile of the terminating UE.

**NOTE:** The option related to "subscription profile of the terminating UE" may not involve end-to-end priority because this option is based on providing priority only in the terminating network based on the terminating UE subscription profile.

**Authorization:** The process to verify that a Service User is authorized for MPS. This includes capabilities to verify authorization to receive priority treatment in the radio access network and to access the MPS application service (MPS Voice, Video, Data, and Messaging).

**End-to-End Priority Treatment:** The process of providing priority treatment in all parts of the path, from one endpoint to the other endpoint(s). End-to-end priority treatment includes priority treatment by all MPS capable networks involved in the MPS session path, the origination network and the termination network as well as any transit networks in between.

**Invocation-to-Release Priority Treatment:** The process of providing priority treatment to all phases of a session, from invocation until release, including all steps in between.

The combination of End-to-End Priority Treatment and Invocation-to-Release Priority Treatment includes both pre- and post-authorization treatment and includes the following aspects:

- 1) Priority processing of the Service User's MPS invocation,
- 2) Admission control and allocation of network resources (including bearer resources) in origination, termination, and transit networks, including handovers,
- 3) Transport of signaling and media packets,
- 4) Priority processing within EPS, 5GS and CN, and
- 5) Processing of the Service Users release of an MPS service session.

Network Interconnection and Protocol Interworking: A Service User's MPS invocation and session establishment will involve transport and processing, and the end-to-end signaling and media path may traverse multiple MPS Service Provider networks. These end-to-end cases include, but are not limited to:

- 1) Voice, video, data and messaging services over EPS or 5GS, including signaling for call/session establishment and media;
- 2) EPS/5GS interworking with the CS domain, including a) calls originated in the CS domain and terminated in EPS/5GS, and b) calls from EPS/5GS to the CS domain;
- 3) CS Fallback from EPS, for one or both ends of call, with maintenance of existing PS domain MPS services, either in EPS or in a legacy system, e.g., the GPRS Core; and
- 4) Access to MPS data, video, and messaging services not under IMS control.

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## 5 High level requirements

### 5.1 General

The system shall provide preferential treatment based on the subscription for MPS for:

- An authorized Service User using a UE with an MPS subscription,

NOTE 1: The MPS subscription related information is associated with the UE's HPLMN subscription and is either stored in the UE and the HPLMN, or only in the HPLMN. In the case that the MPS subscription is stored in the UE, the UE's membership in a special access class as per TS 22.011 [6] is used for E-UTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] is used for 5GS (NR and E-UTRA access to the 5GC). In the case where the MPS subscription is stored only in the HPLMN (5GC), the HPLMN (5GC) can provide MPS indication during the UE registration.

- An authorized Service User using a UE that does not have an MPS subscription, and

NOTE 2: In this case, the Service User's MPS subscription information (e.g., credentials) is not associated with the UE's HPLMN subscription. For example, the Service User borrows a UE that does not have an MPS subscription. .

- An authorized IoT device with an MPS subscription.

NOTE 3: The MPS subscription related information is associated with the IoT device's HPLMN subscription and is either stored in the IoT device and the HPLMN, or only in the HPLMN to allow invocation/revocation of MPS through machine interactions possibly without involving a human. .

Upon invocation of MPS, the system shall provide preferential treatment for access and core network resources associated with the session (i.e., signalling and media bearer related resources within a domain and across domains), including, when applicable, priority treatment towards an enterprise network supporting MPS.

NOTE 4: 'enterprise network' (mentioned above, and in other following sections) may be a 3GPP or non-3GPP network.

A Service User is assigned a priority level by a regional/national authority i.e., agency authorised to issue priority levels. Upon MPS invocation the calling Service User's priority level is used to identify the priority to be used for the session being established.

Pre-emption of active sessions shall be subject to regional/national regulatory requirements.

Subject to regional/national regulatory policy, a PLMN should have the capability to retain public access as a fundamental function. Therefore, MPS traffic volumes should be limited (e.g. not to exceed a regional/national specified percentage of any concentrated network resource, such as eNodeB capacity), so as not to compromise this function.

## 5.2 Priority session treatment in originating network

When an MPS session is originated by a Service User, the session shall receive priority treatment (priority access to signalling and media bearer resources for voice, video, data, and messaging service) in the originating PLMN based on the originating Service User priority information (i.e., priority indication and priority level).

When an MPS session is requested by a Service User and the originating network supporting session establishment cannot assign the necessary resources to the MPS session, the MPS session request shall be:

- Queued,
- Processed for the next available resource in accordance with the calling Service User's priority level and session initiation time.

The network shall support the capability to inform the calling Service User about the status of the MPS session (e.g., tones or signalling messages can be used to indicate that the session request has been queued).

If the queued MPS session times out, then normal session processing applies.

## 5.3 Priority session progression

For an MPS session, a Service User shall receive priority session treatment/progression through the PLMN(s). In case the MPS session traverses or terminates in other networks (e.g., the PSTN), the network providing priority session treatment/progression shall support the capability to indicate to the other network that this is an MPS session.

NOTE: If there is no agreement on priority handling between networks, the priority does not carry across network boundaries.

## 5.4 Priority session treatment in terminating network

When a terminating network receives an incoming MPS session establishment attempt, the MPS session shall receive priority treatment (priority access to signalling and media bearer resources for voice, video, data, and messaging service) in the terminating PLMN, based on the originating Service User priority information. When requested, this includes MPS treatment towards an enterprise network supporting MPS.

As an operator option, the terminating network may invoke priority treatment for an incoming session from a non-MPS subscriber to an MPS subscriber (see clause 4).

When the terminating network supporting session establishment cannot assign the necessary resources to the MPS session, the MPS session request shall be:

- Queued,
- Processed for the next available resource in accordance with the Service User's priority level and session arrival time.

The network shall support the capability to inform the calling Service User about the status of the MPS session (e.g., tones or signalling messages can be used to indicate that the session request has been queued).

If the queued MPS session times out, then normal session processing applies.

## 5.4a Priority Data Bearer Service

The Priority Data Bearer Service provides MPS priority for data and video services not under IMS control.

When a Service User invokes Priority Data Bearer Service for transport of any data packets to and from that Service User, the network should give priority in admission/upgrade of the Priority Data Bearer(s) and in packet data scheduling in the event of congestion (for new sessions and upgrade to existing sessions), subject to regional/national regulatory policy. Specifically:

- A Priority Data Bearer service session shall be given priority for admission/upgrade over non-Priority Data Bearer sessions during times of congestion;
- Data packets belonging to a Priority Data Bearer service shall not be dropped before data packets belonging to a non-Priority Data Bearer service session, when the network is experiencing congestion, subject to the limitation imposed by public access. Priority Data Bearer session QoS, as required for the type of service invoked (e.g., packet delay), should be maintained throughout the activity of the data session.

MPS for Data Transport Service (DTS) is a generic priority packet transport service that applies independently of the specific data application being used. In the case of EPS, MPS for DTS enables the prioritization of all traffic on the default bearer upon request. It may also apply to other bearers based on operator policy and regulatory rules. In the case of 5GS, MPS for DTS enables the prioritization of all traffic on the QoS Flow associated with the default QoS rule upon request. It may also apply to other QoS flows based on operator policy and regulatory rules. MPS for DTS is a specific example of Priority Data Bearer Service. MPS for DTS service specific requirements are described in clause 9.3.

NOTE: MPS for streaming video can be provided as an Over The Top (OTT) service using the MPS for DTS service.

## 5.5 Priority levels

The Service User shall be assigned one of "n" user priority levels. The priority levels are defined with 1 being the highest priority level and "n" being the lowest priority level.

The 3GPP network shall be able to support at least 5 user priority levels.

Assignment of priority levels is a matter of regional/national and operator policy.

In case of interconnecting networks that have different priority levels, mappings between priority levels should be established.

## 5.6 Invocation on demand

MPS priority shall be invoked only when requested by the Service User. However, certain priority treatments are provided prior to invocation as specified in Section 5.13.

MPS is applied when idle resources required for an origination session request are not available.

If idle resources are available when MPS is requested, the request shall be allowed to proceed as normal, but marked as an MPS request.

An indication of an MPS session should be propagated towards the terminating network regardless of the availability of resources in the originating network.

## 5.7 Multimedia priority service code/identifier

MPS shall be requested by including an MPS code/identifier in the session origination request, or optionally, by using an MPS input string (e.g., an MPS public user identity).

## 5.8 Roaming

MPS shall be supported when the Service User is roaming and the visited network and home network support MPS, and roaming agreements are in place for MPS.

### 5.8.1 Roaming within the home country

The system shall support MPS when a UE with an MPS subscription is roaming within the home country and the visited and home network support MPS, and roaming agreements are in place for MPS.

NOTE 1: Roaming within a home country is subject to national/regional rules and operator policy.

NOTE 2: The MPS subscription related information associated with the UE's HPLMN subscription is used for roaming within the home country. Membership in a special access class as per TS 22.011 [6] is used for EUTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] clause 6.22.2.2 is used for 5G (NR and E-UTRAN access to the 5GC).

### 5.8.2 Roaming outside the home country

The system shall support MPS when a UE with an MPS subscription is roaming outside of the home country and the visited and home network support MPS, and roaming agreements are in place for MPS.

NOTE 1: Roaming outside a home country is subject to national/regional rules and operator policy.

NOTE 2: The UE subscription in the home PLMN is configured for MPS with the visited PLMN outside the home country as specified in TS 22.261 [7] clause 6.22.2.2, for 5GS (E-UTRA and NR access to the 5GC).

NOTE 3: The home PLMN can configure the UE to discover and select a network supporting MPS when roaming outside of the home country (e.g., the UE is configured to select a specific MPS capable visited PLMN when roaming in a country that may have multiple PLMNs where some are MPS capable and some are not MPS capable).

## 5.9 Handover

MPS shall be supported during and after the handover (i.e., sessions shall continue to get priority treatment in the network during and after the handover). Resource allocation for the session during handover shall receive priority treatment (priority access to signalling and media bearer resources for voice, video, and data) in the target cell based on the Service User priority information (i.e., priority indication and priority level).

For handover of an MPS voice call to CS, only the active, or if all calls are on hold, only the most recently active voice call shall be transferred and receive the priority treatment in CS. Any remaining non-MPS voice sessions in PS may be released. Any remaining MPS sessions, e.g., MPS data, in PS shall not be released.

## 5.10 Interworking with CS domain

### 5.10.1 Mobile origination in the CS domain -> MPS mobile termination

For a Priority Service voice call, as described in [2] and as specified in [3, 4, 5], originated by a Service User in the CS Domain, MPS shall support priority Mobile Termination of the session in the IMS. The priority information received from the CS domain shall be mapped and used in the IMS accordingly.

### 5.10.2 MPS mobile origination -> mobile termination to the CS domain

For an MPS voice session originated by a Service User in the IMS, MPS shall support priority delivery of the voice session to the serving CS Domain. The calling Service User priority level shall be sent to the CS Domain.

### 5.10.3 CS Fallback from LTE

Circuit Switched (CS) fallback from LTE needs to be given priority in the LTE system to support MPS voice in cells where voice is not supported in the PS domain. Priority treatment applies to both mobile originated calls and mobile terminated calls.

When an MPS Service User in LTE originates a voice call intended to be supported in the CS domain, and when configured by the operator, the LTE system shall provide priority treatment in the signalling and resource allocations needed to support priority CS fallback.

When a terminating LTE network receives indication of an incoming call to the CS domain, the LTE system shall provide priority treatment in the signalling and resource allocations needed to support priority CS fallback.

### 5.10a Fallback in 5GS

MPS voice calls need to be provided priority treatment following a voice fallback in 5GS when configured by the operator to fallback to another RAN type and/or core network type to support voice. The priority treatment applies to both mobile originated calls and mobile terminated calls. Non-voice PDU sessions that have priority in the 5GS prior to a voice fallback need to be given priority after the voice fallback. The priority treatment applies when the MPS non-voice PDU sessions move with the MPS voice PDU session and when MPS non-voice PDU sessions do not move with the MPS voice PDU session.

When an MPS Service User in a 5GS originates an MPS voice call and when configured by the operator for voice fallback to another RAN type and/or core network type, the system shall provide priority treatment in the signalling and resource allocations to support the priority voice fallback.

When a 5GS receives indication of a terminating MPS voice call and when configured by the operator for voice fallback to another RAN type and/or core network type, the system shall provide priority treatment in the signalling and resource allocations to support the priority voice fallback.

When the 5GS initiates a voice fallback for an MPS call, the system shall provide priority treatment in the signalling and resource allocations needed to support non-voice priority PDU sessions, if any exist at the time of the voice fallback. The priority treatment shall apply whether the MPS non-voice PDU session moves with the MPS voice PDU session or not.

## 5.11 Network Management Functions

Based on regional/national requirements and network operator policy, an MPS session shall be exempted from network management controls up to the point where further exemption would cause network instability. Congestion controls, overload controls, load balancing, and load re-balancing shall not adversely impact MPS.

## 5.12 Policy Control

The 3GPP network shall be able to make and enforce policy decisions regarding relative treatment of MPS application services (Voice, Video, Data, and Messaging) for admission control subject to regional/national regulatory requirements and operator policy.

The 3GPP network shall be able to make and enforce policy decisions regarding relative treatment of MPS application services traffic depending on the media type subject to regional/national regulatory requirements and operator policy (e.g., based on operator policy or regulation, Voice may have higher priority than Video or Data).

## 5.13 Priority before service invocation

### 5.13.1 Overview of priority before service invocation

Providing priority treatment to MPS-subscribed UEs during attachment/registration for radio access and network connectivity before the MPS application service session invocation requests improves the probability of an MPS session request being successful. This involves providing priority treatment for the signalling during the UE attachment for

radio access and network connectivity based on a subscription profile. Prior to accessing subscription related information in the network, subscription related information stored in the UE is used, e.g., membership in the special access class required to be reserved for MPS use as per 3GPP TS 22.011 [6], or the special Access Identity used for MPS as per 3GPP TS 22.261 [7]. Without such priority treatment, a Service User's UE might fail to gain radio access network and CN connectivity which in turn means that there is no access to the MPS application services (Voice, Video, and Data). Priority treatment before MPS session request increases the probability of successful MPS session establishment and any associated process for the Service User authorization (e.g., credential collection).

### 5.13.2 Requirement for priority before service invocation

The 3GPP network shall be able to provide priority treatment to an MPS-subscribed UE before the MPS application service invocation (e.g., priority treatment for the default and IMS signalling bearers establishment based on a subscription profile).

The 3GPP network shall be able to provide priority requests for access and attachment to the 3GPP network from an MPS-subscribed UE, including those procedures applied prior to and during the access of subscription related information (e.g., based on the UE membership in a special access class for MPS, or when allowed to operate with Access Identity 1 as per 3GPP TS 22.261 [7]).

## 5.14 Recovery/Restoration

The 3GPP system shall allow operational measures to expedite service recovery and restoration (i.e., service restoration after failure/unavailability). Should a disruption occur, MPS shall be re-provisioned, repaired, or restored to required service levels on a priority basis subject to regional/national regulatory requirements and operator policy.

## 5.15 Quality of Service (QoS)

In certain cases, the QoS characteristics (e.g., packet delay and packet loss) for an MPS session may be the same as the underlying communication service (e.g., voice, video, data or messaging) used to support the MPS session, with the MPS session being provided priority treatment subject to regional/national regulatory and operator policies. In other cases, there may be a need to request specific QoS characteristics for the MPS session (e.g., specific data communications as described in clause 5.4a, 9.3).

The 3GPP network shall allow selection and/or configuration of QoS rule(s) appropriate for MPS Voice, Video, Data and Messaging.

The 3GPP network shall allow enforcement of QoS rule(s) for MPS Voice, Video, Data, and Messaging.

The system shall support means to retain MPS sessions invoked for Voice, Video, Data and Messaging during transient network degradation conditions and recovery (e.g., during short radio link interruption), and re-verify any recovered MPS session afterwards.

## 5.16 Inter-network aspects

The system shall allow MPS priorities to be signalled across interconnected networks.

NOTE 1: Support of MPS services across networks is based on policy and agreements between the network operators.

NOTE 2: Intermediate 3GPP networks not supporting MPS (e.g., transit networks between an originating network and terminating network) should allow MPS priorities to be signalled transparently, based on operator policy and agreements for MPS.

The system shall support means to identify that an incoming voice, video, data or messaging service session from another network is an MPS session and to handle it with priority.

The system shall support measures to verify policy and admit an incoming MPS session for Voice, Video, Data, or Messaging service received from another network with priority.

## 5.17 Interactions with supplementary services

Interactions with a supplementary service might occur during set-up or after establishment of an MPS call or session. A supplementary service is a service which modifies or supplements a basic telecommunication service (see definition in 3GPP TR 21.905 [1]).

The system shall provide MPS priority for a supplementary service associated with an MPS call or session in progress when the supplementary service is associated with the Service User authorized for MPS.

When a supplementary service (e.g., Communication Diversion) results in an established authorized MPS call or session being redirected or extended, MPS priority shall be provided for the redirected or extended call or session.

When a supplementary service (e.g., Conference/Three-Party) is used to join an MPS priority call or session (e.g., to add parties to the established MPS call/session), MPS priority shall be retained on that leg when joined to the supplementary service.

## 5.18 3GPP and non-3GPP accesses

When a UE is using 3GPP RAT(s) as well as non-3GPP WLAN access technology, the 3GPP system will select the most appropriate 3GPP RAT or non-3GPP WLAN access technology for one or more services active on the UE. This subclause covers MPS handling when 3GPP RAT(s) and non-3GPP WLAN access technology are being used for one or more services active on a UE.

The system shall support MPS based on operator policy when the UE is using E-UTRA and non-3GPP WLAN and connected to the same EPC.

The system shall support MPS based on operator policy when the UE is using 3GPP RAT(s) and non-3GPP WLAN and connected to the same 5GC.

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# 6 MMI aspects

In the case when MPS invocation is based on the presence of an MPS-specific service code entered by the originating Service User, this specific service code must be defined for the 3GPP network to recognize such an invocation.

The 3GPP network supporting on-demand invocation of MPS shall recognize a service code indicating a request for MPS.

**NOTE:** A Service User roaming within or outside the home country must use an MPS-specific service code recognized by the visited PLMN, to indicate a request for MPS based on the agreements between the home and visited PLMNs for MPS.

The choice of an MPS-specific service code is a regional/national and operator matter.

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# 7 Security and privacy

## 7.1 General

Operators support and use a wide range of security tools and capabilities to protect the 3GPP system and all supported application services. It is important that appropriate measures be taken to ensure that the use of these security capabilities does not negatively impact MPS.

Use of security mechanisms (e.g., intrusion detection / prevention systems, deep packet inspection, and encryption) shall not interfere with priority treatment mechanisms supporting authorized MPS usage.

## 7.2 Access Control

Access to MPS shall be determined based on the subscriber's profile. A level of authorisation in addition to authorisation to use the IMS is required.

Unauthorized access to MPS shall be prevented.

## 7.3 Integrity

The 3GPP system shall be capable of providing integrity protection to MPS signalling and media bearers for voice, video, data, and messaging service.

## 7.4 Confidentiality/Privacy

The 3GPP system shall be capable of providing confidentiality protection to MPS signalling and media bearers for voice, video, and data as appropriate.

The 3GPP system shall be capable of maintaining anonymity of the originating Service User to the terminating party, if requested by the originating Service User.

## 7.5 Use of Encryption

If encryption is used on MPS communication, priority information shall be accessible to all network elements which have to understand and process that priority information.

## 7.6 Attestation of Authorized MPS Priority

A 3GPP system receiving a session with MPS priority from another network needs to verify that the session is authorized for MPS priority.

The originating 3GPP system shall provide a means to securely attest to MPS authorization for the session.

The 3GPP system shall provide a means to securely verify the attestation of MPS authorization received from the originating network for the session.

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# 8 Charging aspects

A network supporting MPS shall be capable of recording the following charging information, in addition to non-MPS information:

- MPS invocation attempt and successful session set-up,
- Session bearers (originations and/or terminations) on which MPS was used to gain access to resources,
- Recording of MPS information, e.g., priority level.

The system shall associate MPS related charging events with the MPS subscription.

## 9 Service specific aspects

### 9.1 MPS for MMTEL voice

#### 9.1.1 General

MPS for MMTEL voice provides the Service User with priority voice communication sessions in periods of severe network congestion during which normal commercial voice service is degraded.

The system shall support:

- MPS for MMTEL voice and voice conference calls for an authorized Service User using a UE with a subscription for MPS,

NOTE 1: The MPS subscription related information is associated with the UE's HPLMN subscription and is either stored in the UE and the HPLMN, or only in the HPLMN. In the case that the MPS subscription is stored in the UE, the UE's membership in a special access class as per TS 22.011 [6] is used for EUTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] is used for 5G (NR and E-UTRAN access to the 5GC). In the case where the MPS subscription is stored only in the HPLMN (5GC), the HPLMN (5GC) can provide MPS indication during the UE registration.

- MPS for MMTEL voice and voice conference calls for an authorized Service User using a UE that does not have an MPS subscription, and

NOTE 2: In this case, the Service User's MPS subscription information (e.g., credentials) is not associated with the UE's HPLMN subscription. For example, the Service User borrows a UE that does not have an MPS subscription. .

- MPS for all participants of an authorized MMTEL voice conference call.

NOTE 3: MPS for all participants of an MMTEL voice conference call allows a Service User (i.e., the host) to establish an MMTEL voice conference with MPS for all participants, or upgrade an ongoing MMTEL voice conference to MPS for all participants regardless of their subscription to MPS.

#### 9.1.2 Invocation and revocation

##### 9.1.2.1 Invocation

A Service User, using a UE with an MPS subscription, can invoke MPS to request priority for an MMTEL voice/conference call, e.g., when the normal MMTEL call cannot be established, or to upgrade an already established normal MMTEL call to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to:

- initiate MPS for an MMTEL voice call or an MPS MMTEL voice conference call, or
- request upgrade of an established MMTEL voice call, or an established MMTEL voice conference call to MPS.

NOTE 1: MPS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User inclusion of an MPS-unique identifier or feature code as part of the request to establish an MPS for MMTEL voice call).

A Service User, using a UE with an MPS subscription, can invoke MPS to request priority for an MMTEL voice call or conference call during roaming, e.g., when the normal MMTEL voice/conference call cannot be established, or to upgrade an already established normal MMTEL call to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to:

- initiate MPS for an MMTEL voice call, or an MPS MMTEL voice conference call when roaming within the home country and outside the home country, or

- requests upgrade of an established MMTEL voice call, or an established MMTEL voice conference call to MPS when roaming within the home country and outside the home country.

NOTE 2: MPS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User inclusion of an MPS-unique identifier or feature code as part of the request to establish an MPS for MMTEL voice call) that is recognized by the visited PLMN.

A Service User using a UE that does not have an MPS subscription can invoke MPS to request priority for an MMTEL voice call or MMTEL voice conference call, e.g., when the normal MMTEL voice call or MMTEL voice conference call cannot be established.

The system shall support means for a Service User using a UE that does not have a subscription for MPS to initiate MPS for an MMTEL voice call or MMTEL voice conference call.

NOTE 3: MPS invocation using a UE that does not have an MPS subscription is done using a predetermined method that is outside the scope of 3GPP (e.g., by the Service User use of a predetermined access number, such as a special telephone number).

A Service User who is the host of a MMTEL voice conference can invoke MPS to upgrade the entire MMTEL voice conference call to obtain priority treatment for all participants on the MMTEL voice conference call, e.g., when the normal MMTEL voice conference call cannot be established, or to upgrade an already established normal MMTEL conference call to MPS.

The system shall support means for a Service User to:

- initiate MPS for all participants of an MMTEL voice conference call, or
- request upgrade of all participants of an ongoing MMTEL voice conference call to MPS.

The system shall provide MPS for a late participant joining an MPS for MMTEL voice conference after MPS was activated for all participants.

NOTE 4: When MPS is invoked for all participants of a MMTEL voice conference, the user priority level is based on the host MPS Service User, except in cases where an individual participant used MPS to join the conference with a higher user priority level, the higher user priority level is kept.

NOTE 5: The invocation of MPS for all participants may be done using a customized feature of a voice conference service (available only to the host) that indicates a request for priority to the system.

### 9.1.2.2 Revocation

The 3GPP system shall revoke MPS for the following cases:

- upon end of an MPS MMTEL voice call, or an MPS MMTEL voice conference call from a UE with an MPS subscription, and the UE shall return to normal conditions (i.e., use of normal MMTEL voice service),
- upon end of an MPS MMTEL voice call, or an MPS MMTEL voice conference call from a UE that does not have an MPS subscription, and the UE shall return to normal conditions (i.e., use of normal voice service), and
- upon end of an MPS MMTEL voice conference call where MPS was provided to all participants on the voice conference call, and the UEs shall return to normal conditions (i.e., use of normal MMTEL voice service).

The 3GPP system shall revoke MPS for an individual participant leaving an ongoing MPS for MMTEL voice conference where MPS is activated for all participants.

When an MPS MMTEL voice call or an MPS MMTEL voice conference call is not explicitly ended, upon UE detachment/deregistration (e.g., orderly power down), the system in the RPLMN shall automatically revoke MPS such that MPS priority treatment shall not automatically apply to subsequent calls upon subsequent registration.

### 9.1.3 Authentication and authorization

The system shall support means to authenticate and authorize an MPS MMTEL voice or voice conference call request from a UE with an MPS subscription.

The system shall support means to authenticate and authorize a Service User request for an MPS MMTEL voice or voice conference call from a UE that does not have an MPS subscription.

NOTE 1: The method for authenticating and authorizing the Service User using a UE that does not have an MPS subscription is predetermined. As part of the authentication and authorization process, the Service User provides MPS credentials (e.g., a calling card number, PIN or security token) specifically assigned for the purpose of obtaining MPS from a UE that does not have an MPS subscription.

The system shall support means for a visited PLMN, including a visited PLMN within or outside of the home country, to verify with the home PLMN that a UE is authorized for MPS, and to authorize an MPS for MMTEL voice or voice conference call.

NOTE 2: The method for authenticating and authorizing UE for MPS when roaming is based on operator policy and roaming agreements between the visited PLMN and home PLMN for MPS as per clause 5.8.

The system shall support means to authenticate and authorize a Service User request to establish or upgrade all participants of an MMTEL voice conference call to MPS priority.

## 9.1.4 Signalling

The system shall provide priority treatment to the invocation signalling in the network once the request by the Service User for MPS for an MMTEL voice or MMTEL voice conference call is identified by the system.

The system shall support a means for MPS activation when normal MMTEL voice service is congested at the request of the Service User.

The system shall provide priority treatment to the affected signalling when MPS is activated for an MMTEL voice call, or MMTEL voice conference call.

## 9.1.5 Media

The system shall provide priority treatment to the audio media flows, when MPS is activated for an MMTEL voice call or MMTEL voice conference call.

# 9.2 MPS for MMTEL video

## 9.2.1 General

The primary purpose of MPS for MMTEL video is to provide the Service User with priority video communication sessions in periods of severe network congestion during which normal commercial video service is degraded.

The system shall support:

- MPS for MMTEL video and video conference calls for an authorized Service User using a UE with a subscription for MPS,

NOTE 1: The MPS subscription related information is associated with the UE's HPLMN subscription and is either stored in the UE and the HPLMN, or only in the HPLMN. In the case that the MPS subscription is stored in the UE, the UE's membership in a special access class as per TS 22.011 [6] is used for EUTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] is used for 5G (NR and E-UTRAN access to the 5GC). In the case where the MPS subscription is stored only in the HPLMN (5GC), the HPLMN (5GC) can provide MPS indication during the UE registration.

- MPS for MMTEL video and video conference calls for an authorized Service User using a UE that does not have an MPS subscription, and

NOTE 2: In this case, the Service User's MPS subscription information (e.g., credentials) is not associated with the UE's HPLMN subscription. For example, the Service User borrows a UE that does not have an MPS subscription..

- MPS for all participants of an authorized MMTEL video conference call.

NOTE 3: MPS for all participants of an MMTEL video conference call allows a Service User (i.e., the host) to establish an MMTEL video conference with MPS for all participants, or upgrade on ongoing MMTEL video conference to MPS for all participants regardless of their subscription to MPS.

## 9.2.2 Invocation and revocation

### 9.2.2.1 Invocation

A Service User, using a UE with an MPS subscription, can invoke MPS to request priority for an MMTEL video call or MMTEL video conference call, e.g., when the normal MMTEL video call cannot be established, or to upgrade an already established normal MMTEL call to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to:

- initiate MPS for an MMTEL video call or an MPS MMTEL video conference call, or
- request upgrade of an established MMTEL video call, or an established MMTEL video conference call to MPS.

NOTE 1: MPS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User inclusion of an MPS-unique identifier or feature code as part of the request to establish an MPS for MMTEL video call).

NOTE 2: In the case where the MMTEL video call is already established but becomes unacceptable, the invocation by the Service User to upgrade the MMTEL video call to MPS may be done using a using a specialized MPS application on the UE (i.e., as an alternative to releasing and retrying the call which may fail).

A Service User, using a UE with an MPS subscription, can invoke MPS to request priority for an MMTEL video call or MMTEL video conference call during roaming, e.g., when the normal MMTEL video call cannot be established, or to upgrade an already established normal MMTEL video/conference call to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to:

- initiate MPS for an MMTEL video call, or an MPS MMTEL video conference call when roaming within the home country and outside the home country, or
- request upgrade of an established MMTEL video call, or an established MMTEL video conference call to MPS when roaming within the home country and outside the home country.

NOTE 3: MPS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User inclusion of an MPS-unique identifier or feature code as part of the request to establish an MPS for MMTEL video call) that is recognized by the visited PLMN.

NOTE 4: In the case where the MMTEL video call is already established but becomes unacceptable, the invocation by the Service User to upgrade the MMTEL video call to MPS may be done using a using a specialized MPS application on the UE (i.e., as an alternative to releasing and retrying the call which may fail) that is recognized by the visited PLMN.

A Service User, using a UE that does not have an MPS subscription, can invoke MPS to request priority for an MMTEL video call or MMTEL video conference call, e.g., when the normal MMTEL video call, or MMTEL video conference call cannot be established

The system shall support means for a Service User using a UE that does not have a subscription for MPS to initiate MPS for an MMTEL video call or MMTEL video conference call.

NOTE 5: MPS invocation using a UE that does not have an MPS subscription is done using a predetermined method (e.g., by the Service User use of a predetermine access number, such as a special telephone number) and is outside the scope of 3GPP.

A Service User who is the host of a MMTEL video conference can invoke MPS to upgrade the entire MMTEL video conference call to obtain priority treatment for all participants on the MMTEL video conference call, e.g., when the normal MMTEL video call cannot be established, or to upgrade an already established normal MMTEL video conference call to MPS.

The system shall support means for a Service User to:

- initiate MPS for all participants of an MMTEL video conference call, or
- request upgrade of all participants of an ongoing MMTEL video conference call to MPS.

The system shall provide MPS for a late participant joining an MPS for MMTEL video conference after MPS was activated for all participants.

NOTE 6: When MPS is invoked for all participants of a MMTEL video conference, the user priority level is based on the host MPS Service User, except in cases where an individual participant used MPS to join the conference with a higher user priority level, the higher user priority level is kept.

NOTE 7: The invocation of MPS for all participants may be done using a customized feature of a video conference service (available only to the host) that indicates a request for priority to the system.

### 9.2.2.2 Revocation

The 3GPP system shall revoke MPS for the following cases:

- upon end of an MPS MMTEL video call, or an MPS MMTEL video conference call from a UE with an MPS subscription, and the UE shall return to normal conditions (i.e., use of normal MMTEL video service),
- upon end of an MPS MMTEL video call, or an MPS MMTEL video conference call from a UE that does not have an MPS subscription, and the UE shall return to normal conditions (i.e., use of normal video service), and
- upon end of an MPS MMTEL video conference call where MPS was provided to all participants on the video conference call, and the UEs shall return to normal conditions (i.e., use of normal MMTEL video service).

The 3GPP system shall revoke MPS for an individual participant leaving an ongoing MPS for MMTEL video conference where MPS is activated for all participants.

When an MPS MMTEL video call or an MPS MMTEL video conference call is not explicitly ended, upon UE detachment/deregistration (e.g., orderly power down), the 3GPP system in the RPLMN shall automatically revoke MPS such that MPS priority treatment shall not automatically apply to subsequent calls upon subsequent registration.

## 9.2.3 Authentication and authorization

The system shall support means to authenticate and authorize an MPS MMTEL video or video conference call request from a UE with an MPS subscription.

The system shall support means to authenticate and authorize a Service User request for an MPS MMTEL video or video conference call from a UE that does not have an MPS subscription.

NOTE 1: The method for authenticating and authorizing the Service User using a UE that does not have an MPS subscription is predetermined. As part of the authentication and authorization process, the Service User provides MPS credentials (e.g., a calling card number, PIN or security token) specifically assigned for the purpose of obtaining MPS from a UE that does not have an MPS subscription.

The system shall support means for a visited PLMN, including a visited PLMN outside of the home country, to verify with the home PLMN that a UE is authorized for MPS, and to authorize an MPS for MMTEL video or video conference call.

NOTE 2: The method for authenticating and authorizing UE for MPS when roaming is based on operator policy and roaming agreements between the visited PLMN and home PLMN for MPS as per clause 5.8.

The system shall support means to authenticate and authorize a Service User request to establish or upgrade all participants of an MMTEL video conference call to MPS priority.

## 9.2.4 Signalling

The system shall provide priority treatment to the invocation signalling in the network once the request by the Service User for MPS for an MMTEL video or MMTEL video conference call is identified by the system.

The system shall support a means for MPS activation when normal MMTEL video service is congested at the request of the Service User.

The system shall provide priority treatment to the affected signalling when MPS is activated for an MMTEL video call, or MMTEL video conference call.

## 9.2.5 Media

The system shall provide priority treatment to the audio and video media flows, when MPS is activated for an MMTEL video call or MMTEL video conference call.

The system shall support a means to differentiate the priority between the audio and video streams of a given MPS MMTEL video call.

The system shall support a means to differentiate the priority between the audio and video streams of MPS participants (Service Users) on an MMTEL video conference call.

The system shall retain the audio of an MPS for MMTEL video call or MMTEL video conference call when both the audio and video cannot be supported but the audio can be supported.

The system shall support priority re-establishment of the video media when an MPS MMTEL video call, or an MPS MMTEL video conference call, is in progress with only audio media and the conditions which previously blocked the video media are no longer applicable.

NOTE: This requirement does not imply the need to introduce a new IMS feature. It adds the need for priority treatment using the existing IMS feature for re-establishment of the video media.

## 9.3 MPS for DTS

### 9.3.1 General

MPS for Data Transport Service (DTS) is a generic priority packet transport service that applies independently of the specific data application being used. It is a specific example of Priority Data Bearer Service described in clause 5.4a. MPS for DTS provides the Service User with priority for applications using the default bearer upon request (in the case of EPS), or QoS flow associated with the default QoS rule upon request (in the case of 5GS), to one or more selected active Packet Data Networks (PDNs)/Data Networks (DNs), in periods of severe network congestion during which normal commercial data service is degraded. MPS for DTS may also apply to other bearers (in the case of EPS) and other QoS Flows (in the case of 5GS) based on operator policy and regulatory rules.

NOTE 1: Service Data Flows (SDFs) previously mapped to the default bearer (in case of EPS) / QoS flow associated with the default QoS rule (in case of 5GS), are upgraded to MPS priority.

The system shall support:

- MPS for DTS for an authorized Service User using a UE with a subscription for MPS, and

NOTE 2: The MPS subscription related information is associated with the UE's HPLMN subscription and is either stored in the UE and the HPLMN, or only in the HPLMN. In the case that the MPS subscription is stored in the UE, the UE's membership in a special access class as per TS 22.011 [6] is used for EUTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] is used for 5G (NR and E-UTRAN access to the 5GC). In the case where the MPS subscription is stored only in the HPLMN (5GC), the HPLMN (5GC) can provide MPS indication during the UE registration.

- MPS for DTS for an authorized Service User using a UE that does not have an MPS subscription.

NOTE 3: In this case, the Service User's MPS subscription information (e.g., credentials) is not associated with the UE's HPLMN subscription. For example, the Service User borrows a UE that does not have an MPS subscription..

MPS for DTS may be used to by a Service User to obtain priority access (e.g., Virtual Private Network (VPN) access) to an enterprise network (e.g., a private corporate network or private Government Agency network to download data and/or access enterprise applications such as email, text/chat/presence, voice and video).

The system shall support for an authorised Service User, an end-to-end MPS for DTS connection between the MPS subscribed UE and an associated enterprise network supporting MPS on demand based on operator policy and when agreements are in place for MPS.

NOTE 4: The end-to-end MPS for DTS connection between the UE and an associated enterprise network is supported either using a web browser (e.g., use of a predetermined address (i.e., URL) in a web browser) or using a user-selectable option provided as part of the VPN client in the UE with an MPS subscription.

MPS for DTS provides an IoT device with subscription to MPS with priority for applications using a specific default bearer (in the case of EPS), or default QoS flow (in the case of 5GS), towards a single specified PDN/DN; in the case of IoT connectivity to an enterprise, MPS also provides priority for the terminating access network (connected to the enterprise).

The system shall support:

- MPS for DTS for an authorized IoT device with a subscription for MPS, and
- an end-to-end MPS for DTS connection between the MPS subscribed IoT device and an associated enterprise network supporting MPS on demand based on operator policy when agreements are in place for MPS.

NOTE 5: An MPS specialized application on the MPS subscribed IoT device is used to support MPS for DTS through machine interactions that may not directly involve a human Service User.

An authorized enterprise network supporting MPS uses MPS for DTS to activate priority for remote MPS subscribed UEs and MPS subscribed IoT devices associated with the enterprise network based on operator policy when agreements are in place for MPS.

The system shall support:

- for an authorized enterprise network supporting MPS, activation of MPS for DTS for remote MPS subscribed UEs associated with the enterprise network on demand based on operator policy when agreements are in place for MPS, and
- for an authorized enterprise network supporting MPS, activation of MPS for DTS for remote MPS subscribed IoT devices associated with the enterprise network on demand based on operator policy when agreements are in place for MPS.

NOTE 6: MPS for DTS activation by an authorized enterprise network supporting MPS involves prearrangement and configuration (i.e., subscription arrangement identifying the enterprise network authorization for remote activation of DTS in IoT devices) within the MPS Service Provider PLMN.

## 9.3.2 Invocation and revocation

### 9.3.2.1 Invocation

A Service User, using a UE with an MPS subscription, can invoke MPS for DTS to request priority, e.g., when the normal data session cannot be established, or to upgrade an already established normal data session to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to initiate MPS for a DTS session.

NOTE 1: MPS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User using a web browser to enter a predetermined address such as an URL).

A Service User, using a UE with an MPS subscription, can invoke MPS to request priority during roaming, e.g., when the normal data sessions cannot be established, or to upgrade an already established normal data session to MPS.

The system shall support means for a Service User using a UE with an MPS subscription to initiate MPS for DTS session when roaming within the home country and outside the home country.

NOTE 2: MPS for DTS invocation using a UE with an MPS subscription is done using a predetermined method (e.g., by the Service User using a web browser to enter a predetermined address such as an URL) recognized by the visited PLMN.

A Service User, using a UE that does not have an MPS subscription, can invoke MPS for DTS to request priority, e.g., when the normal data session cannot be established, or to upgrade an already established normal data session to MPS.

The system shall support means for a Service User using a UE that does not have a subscription for MPS to initiate MPS for DTS.

NOTE 3: MPS for DTS invocation using a UE that does not have an MPS subscription is done using a predetermined method (e.g., by the Service User use of a predetermine URL address) and is outside the scope of 3GPP.

A Service User, using a UE with an MPS subscription, can invoke MPS for DTS to obtain priority for Virtual Private Network (VPN) access to an enterprise network (e.g., a Government Agency private enterprise network), e.g., when normal data session cannot be established or is degraded.

The system shall support means for a Service User using a UE with an MPS subscription to initiate an MPS for DTS session to an associated enterprise network supporting MPS on demand based on operator policy and when agreements are in place for MPS.

NOTE 4: Invocation of MPS for DTS is done either using a web browser (e.g., use of a predetermined address (i.e., URL) in a web browser) or using a user-selectable option provided as part of the VPN client in the UE with an MPS subscription.

An IoT device with an MPS subscription can invoke MPS for DTS to request priority when normal data service is degraded.

The system shall support means for an IoT device with an MPS subscription to initiate an MPS for DTS session to an enterprise network supporting MPS.

NOTE 5: An MPS specialized application on the MPS subscribed IoT device is responsible for determining whether or not to invoke MPS for DTS in support of the data communication needs. The MPS specialized application allows invocation/revocation of the DTS through machine interactions that may not directly involve a human Service User.

An authorized enterprise network supporting MPS activates MPS for DTS to request priority for MPS subscribed UEs and MPS subscribed IoT devices associated with the enterprise network when normal data service is unacceptable.

The 3GPP system shall support means for an authorized enterprise network supporting MPS to request activation of MPS for DTS for the following cases:

- a specific MPS subscribed UE or IoT device, and
- a group of MPS subscribed UEs or IoT devices.

NOTE 6: MPS for DTS invocation done by the enterprise network supporting MPS involves prearrangement and configuration (i.e., subscription arrangement identifying the enterprise network authorization for remote activation of DTS in IoT devices) within the MPS Service Provider PLMN. For example, an MPS specialized application hosted in the enterprise network (e.g., IoT application server) may be responsible for determining whether or not to invoke MPS for DTS. The MPS specialized application allows invocation/revocation of the DTS through machine interactions that may not directly involve a human Service User.

The system shall support receiving and authenticating MPS for DTS invocation requests from authorized MPS Service Users via public non-3GPP networks.

NOTE 7: The intent of the above requirement is to allow an authorized MPS Service User to send a request via the Internet to establish an MPS for DTS session for one or more active PDNs/DNs of a UE.

The system shall support discovery and selection of active data connections upon receipt of an MPS for DTS invocation request by an authorized MPS Service User.

### 9.3.2.2 Revocation

The system shall support means to release an MPS for DTS session for the cases:

- an MPS Service User using a UE with an MPS subscription,

- an MPS Service User using a UE that does not have an MPS subscription, and
- an IoT device with an MPS subscription.

The system shall support means for an authorized enterprise network supporting MPS to explicitly request to release an MPS for DTS session or group of MPS for DTS sessions while maintaining basic connectivity to the MPS subscribed UE(s) or IoT device(s).

The system shall support means for an MPS Service User to explicitly release an MPS for DTS session from a UE with an MPS subscription when roaming, including outside the home country.

If MPS for DTS is not explicitly revoked by the Service User or an IoT device, the system in the RPLMN shall automatically revoke MPS:

- upon UE detachment/deregistration (e.g., power down), or
- when all the connections pertaining to the MPS for DTS session are released (without explicit release of the MPS for DTS session).

The system shall automatically revoke MPS when the maximum allowed duration for an MPS for DTS session is reached.

### 9.3.3 Authentication and authorization

The system shall support means to authenticate and authorize an MPS for DTS session request from a UE with an MPS subscription.

The system shall support means to authenticate and authorize a Service User request for an MPS for DTS session from a UE that does not have an MPS subscription.

NOTE 1: The method for authenticating and authorizing the Service User using a UE that does not have an MPS subscription is predetermined. As part of the authentication and authorization process, the Service User provides MPS credentials (e.g., PIN or security token) specifically assigned for the purpose of obtaining MPS from a UE that does not have an MPS subscription.

The system shall support means for a visited PLMN, including a visited PLMN outside of the home country, to verify with the home PLMN that a UE is authorized for MPS, and to authorize an MPS for DTS session.

NOTE 2: The method for authenticating and authorizing UE for MPS when roaming is based on operator policy and roaming agreements between the visited PLMN and home PLMN for MPS as per clause 5.8.

The system shall support means to authenticate and authorize an MPS for DTS session request from an IoT device with an MPS subscription.

The system shall support means to authenticate and authorise an enterprise network supporting MPS requesting activation of MPS for DTS for the following cases:

- a specific MPS subscribed UE or IoT device, and
- a group of MPS subscribed UEs or IoT devices.

### 9.3.4 Signalling

The system shall provide priority treatment to the invocation signalling in the network once the MPS for DTS request is identified by the system.

The system shall support a means for MPS for DTS activation when normal data service is congested.

### 9.3.5 Media

The system shall provide priority treatment to the affected media flows when an MPS for DTS session is activated.

The system shall provide priority treatment to the affected media flows when MPS for DTS is activated for the connection between an MPS subscribed UE or IoT device and an associated enterprise network supporting MPS.

NOTE: Both the MPS subscribed UE or IoT device and the enterprise network must be served by the same PLMN.

### 9.3.6 QoS

The system shall be capable of supporting a set of default QoS characteristics for an active MPS for DTS session.

The system shall be capable of verifying authorization for a requested QoS modification to an active MPS for DTS session.

The system shall be capable of making authorized QoS modifications in support of MPS for DTS for all media traffic supported via the default bearer (in the case of EPS), or the default QoS flow (in the case of 5GS).

The system shall support means to allow a Service User to request QoS modifications for an active MPS for DTS session.

The system shall support means to provide a Service User with an indication that a requested QoS modification of an active MPS for DTS session was successful.

### 9.3.7 Security

The system shall support security capabilities to verify an enterprise network's authorization to request MPS for DTS activation.

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## 9.4 MPS for Messaging Services

### 9.4.1 General

MPS for Messaging provides priority for messaging services in periods of network congestion during which normal commercial messaging services are degraded.

The system shall support MPS priority for messaging services supported using IMS Messaging, SMS and/or MMS, or MSGin5G for an authorized Service User using a UE with a subscription for MPS.

NOTE 1: MPS for Messaging may make use of commercial messaging service offerings provided by the operator. However, the messaging service applications are not in scope.

NOTE 2: The MPS Service User might not know whether the messaging service is supported using IMS Messaging, SMS and/or MMS, or MSGin5G.

NOTE 3: SMS options in scope are SMS via NAS and SMS over IP (i.e., SMS over MAP and SMS over SGs are not in scope).

The system shall support MPS priority for messaging using SMS and/or MMS or MSGin5G for an authorized IoT device with a subscription for MPS.

NOTE 4: An MPS specialized application on the MPS subscribed IoT device is used to support MPS for Messaging through machine interactions that might not directly involve a human Service User.

### 9.4.2 Invocation and revocation

#### 9.4.2.1 Invocation

A Service User using a UE with an MPS subscription can activate MPS for Messaging to request priority, e.g., when the normal messaging service is degraded.

The system shall support means for a Service User using a UE with an MPS subscription to activate MPS for Messaging.

NOTE 1: MPS for Messaging invocation is done using a predetermined method (e.g., by the Service User using a web browser to enter a predetermined address such as an URL or sending a message to the MPS operator to activate MPS for Messaging).

A Service User using a UE with an MPS subscription can invoke MPS for Messaging to request priority during roaming, e.g., when the normal messaging service is degraded.

The system shall support means for a Service User using a UE with an MPS subscription to activate MPS for Messaging when roaming within the home country and outside the home country.

NOTE 2: MPS for Messaging invocation is done using a predetermined method recognized by the visited PLMN.

An IoT device with an MPS subscription can invoke MPS for Messaging to request priority when normal messaging service is degraded.

The system shall support means for an authorized IoT device with an MPS subscription to activate MPS for Messaging.

NOTE 3: An MPS specialized application on the MPS subscribed IoT device is responsible for determining whether or not to invoke MPS for Messaging in support of the text communication needs. The MPS specialized application allows invocation/revocation of MPS for Messaging through machine interactions that might not directly involve a human Service User.

An authorized enterprise network supporting MPS activates MPS for Messaging to request priority for MPS subscribed UEs and MPS subscribed IoT devices associated with the enterprise network when normal messaging service is degraded.

The system shall support means for an authorized enterprise network supporting MPS to request activation of MPS for Messaging for the following cases:

- a specific MPS subscribed UE or MPS subscribed IoT device, and
- a group of MPS subscribed UEs or MPS subscribed IoT devices.

NOTE 4: MPS for Messaging invocation done by the enterprise network supporting MPS involves prearrangement and configuration (i.e., subscription arrangement identifying the enterprise network authorization for remote activation of MPS for Messaging) within the MPS Service Provider PLMN. For example, an MPS specialized application hosted in the enterprise network (e.g., IoT application server) might be responsible for determining whether or not to invoke MPS for Messaging. The MPS specialized application allows invocation/revocation of MPS for Messaging through machine interactions that might not directly involve a human Service User.

The system shall support receiving and authenticating MPS for Messaging invocation requests from authorized MPS Service Users using UEs with an MPS subscription and authorized IoT devices with an MPS subscription via public non-3GPP networks.

NOTE 4: The intent of the above requirement is to allow an authorized MPS Service User or authorized IoT device to send a request via the Internet to activate or enable MPS for Messaging.

Based on national/regional regulatory rules and operator policy, the system shall support means to activate:

- MPS for Messaging separately from MPS for DTS described in clause 9.2, or
- MPS for Messaging and MPS for DTS together.

NOTE 5: The intent of the above requirement is to allow the MPS Service Provider flexibility to activate/voke MPS for Messaging and MPS for DTS separately or in combination.

#### 9.4.2.2 Revocation

The system shall support means to revoke MPS for Messaging for the cases:

- a Service User using a UE with an MPS subscription, and
- an IoT device with an MPS subscription.

The system shall support means for an authorized enterprise network supporting MPS to explicitly request to revoke MPS for Messaging for a individual or group of MPS subscribed UEs or MPS subscribed IoT devices while maintaining basic connectivity to the MPS subscribed UE(s) or MPS subscribed IoT device(s).

The system shall support means for a Service User to explicitly revoke MPS for Messaging from a UE with an MPS subscription when roaming, including outside the home country.

If MPS for Messaging is not explicitly revoked by the Service User or IoT device, the system in the RPLMN shall automatically revoke MPS upon UE detachment/deregistration (e.g., power down).

The system shall support means for an authorized IoT device with an MPS subscription to revoke MPS for Messaging.

The system shall automatically revoke MPS when the maximum allowed duration for MPS for Messaging is reached.

Based on national/regional regulatory rules and operator policy, the system shall support means to revoke:

- MPS for Messaging separately from MPS for DTS described in clause 9.2, or
- MPS for Messaging and MPS for DTS together.

NOTE 5: The intent of the above requirement is to allow the MPS Service Provider flexibility to activate/revoke MPS for Messaging and MPS for DTS separately or in combination.

### 9.4.3 Authentication and authorization

The system shall support means to authenticate and authorize an MPS for Messaging activation request from a UE with an MPS subscription.

The system shall support means for a visited PLMN, including a visited PLMN outside of the home country, to verify with the home PLMN that a UE is authorized for MPS, and to authorize MPS for Messaging.

NOTE 1: The MPS subscription related information is associated with the UE's HPLMN subscription and is either stored in the UE and the HPLMN, or only in the HPLMN. In the case that the MPS subscription is stored in the UE, the UE's membership in a special access class as per TS 22.011 [6] is used for EUTRAN access to the EPC and membership in Access Identity 1 as per TS 22.261 [7] is used for 5G (NR and E-UTRAN access to the 5GC). In the case where the MPS subscription is stored only in the HPLMN (5GC), the HPLMN (5GC) can provide MPS indication during the UE registration.

NOTE 2: The method for authenticating and authorizing a UE for MPS when roaming is based on operator policy and roaming agreements between the visited PLMN and home PLMN for MPS as per clause 5.8.

The system shall support means to authenticate and authorize an MPS for Messaging activation request from an IoT device with an MPS subscription.

The system shall support means to authenticate and authorise an enterprise network that supports MPS when it requests activation of MPS for Messaging for the following cases:

- a specific MPS subscribed UE or MPS subscribed IoT device, and
- a group of MPS subscribed UEs or MPS subscribed IoT devices.

### 9.4.4 Signalling

The system shall provide priority treatment to the invocation signalling in the network once the MPS for Messaging request is identified by the system.

The system shall support a means for MPS for Messaging activation when normal messaging service is congested.

## 9.4.5 Message origination and termination

### 9.4.5.1 IMS Messaging

When MPS for Messaging is authorized and activated for an originating UE with a subscription for MPS using IMS Messaging for the messaging service, the system shall provide:

- end to end priority treatment for point to point messages when the recipient(s) is using IMS Messaging regardless whether the recipient(s) have a subscription for MPS, and
- priority treatment for messages to/from the Message Service Center.

When MPS for Messaging is authorized and activated for a terminating UE with a subscription for MPS using IMS Messaging for the messaging service, the system shall provide priority treatment for all messages to/from the Message Service Center.

When a terminating network receives an incoming message with an MPS for Messaging indication, the message shall receive priority treatment in the terminating PLMN.

NOTE: End to end priority can be provided by the 3GPP system for the point to point messages when both the originating UE and the destination UE are using IMS Messaging service. When the originating UE is using IMS Messaging service but the destination UE is not using IMS Messaging service, priority treatment is provided by the 3GPP system only to/from the Message Service Center.

### 9.4.5.2 SMS and MMS

When MPS for Messaging is authorized and activated for a UE or IoT device with a subscription for MPS using SMS or MMS for the messaging service, the system shall provide priority treatment for all messages to/from the Message Service Center.

NOTE 1: The SMS and MMS platforms and inter system aspects are outside 3GPP scope.

NOTE 2: The above requirement is not applicable for SMS over MAP and SMS over SGs.

### 9.4.5.3 MSGin5G

When MPS for Messaging is authorized and activated for an originating UE or IoT device with a subscription for MPS using MSGin5G for the messaging service, the system shall provide:

- end to end priority treatment for point to point messages when the recipient(s) is using MSGin5G regardless whether the recipient(s) have a subscription for MPS, and
- priority treatment for messages to/from the Message Service Center.

When MPS for Messaging is authorized and activated for a terminating UE or IoT device with a subscription for MPS using MSGin5G for the messaging application service, the system shall provide priority treatment for all messages to/from the Message Service Center.

When a terminating network receives an incoming message with an MPS for Messaging indication, the message shall receive priority treatment in the terminating PLMN.

NOTE 1: End to end priority can be provided by the 3GPP system for the point to point messages when both the originating UE and the destination UE are using MSGin5G service. When the originating UE is using MSGin5G but the destination UE is not using MSGin5G, priority treatment is provided by the 3GPP system only to/from the Message Service Center.

NOTE 2: MSGin5G is only applicable to 5GS.

## 9.4.8 Security

The system shall support security capabilities to verify an enterprise network's authorization to request MPS for Messaging activation.

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## 10 Non-3GPP access

### 10.1 MPS when access to the EPC/5GC is WLAN

MPS can be supported for MMTEL voice/video calls and data sessions when the access to the EPC/5GC is WLAN and the 3GPP system is used for the MPS authorization. In this case, MPS priority treatment can be provided by:

- both the WLAN access and the EPC/5GC (i.e., when the WLAN supports MPS), or
- only the EPC/5GC (i.e., when the WLAN does not support MPS).

The following subclauses provide requirements specific to WLAN access to EPC/5GC.

#### 10.1.1 MPS for MMTEL voice and video

##### 10.1.1.1 General

For a UE with WLAN access to the EPC/5GC, the system shall support the requirements in clauses 9.1 and 9.2 for MMTEL voice and voice conference calls and MMTEL video and video conference calls by an authorized MPS Service User using

- a UE with a subscription for MPS, and
- a UE that does not have an MPS subscription.

The system shall support the requirements in clauses 9.1 and 9.2 for MPS for MMTEL voice and voice conference calls and MPS for MMTEL video and video conference calls terminating to a UE with WLAN access to the EPC/5GC regardless of the terminating UE subscription for MPS.

##### 10.1.1.2 Authentication and authorization

For a UE with a 3GPP subscription for MPS and with WLAN access to the EPC/5GC, the system shall support MPS for MMTEL voice/video authorization based on the UE subscription information.

For a UE that does not have a 3GPP subscription for MPS and with WLAN access to the EPC/5GC, the system shall support MPS for MMTEL voice/video authorization based on Service User credentials not associated with the UE (e.g., a calling card number, PIN or security token).

##### 10.1.1.3 WLAN Interworking

For a UE with WLAN access to the EPC/5GC, the 3GPP system shall support delivery of the following to the WLAN:

- indication of MPS for MMTEL voice/video authorization,
- priority marking of transport parameters of MPS for MMTEL voice/video signalling and media, and
- QoS characteristics of MPS for MMTEL voice/video signalling and media.

### 10.1.2 MPS for DTS

#### 10.1.2.1 General

For a UE or IoT device with WLAN access to the EPC/5GC, the system shall support the requirements in clause 9.3 on MPS for DTS sessions for:

- an authorized Service User using a UE with a subscription for MPS,
- an authorized Service User using a UE that does not have an MPS subscription,
- an authorized IoT device with a subscription for MPS, and

- an authorized enterprise network activation of MPS for DTS for remote MPS subscribed UEs/IoT devices associated with the enterprise network.

#### 10.1.2.2 Authentication and authorization

For a UE or IoT device with a 3GPP subscription for MPS and with WLAN access to the EPC/5GC, the system shall support MPS for DTS authorization based on the UE subscription information.

For a UE that does not have a 3GPP subscription for MPS and with WLAN access to the EPC/5GC, the system shall support MPS for DTS authorization based on Service User credentials not associated with the UE (e.g., a calling card number, PIN or security token).

For an authorized enterprise network that is activating MPS for DTS for a remote UE or IoT device with a 3GPP subscription for MPS, the system shall support MPS for DTS authorization based on the UE or IoT device subscription information.

#### 10.1.2.3 WLAN interworking

For a UE or IoT with WLAN access to the EPC/5GC, the 3GPP system shall support delivery of the following to the WLAN:

- indication of MPS for DTS authorization,
- priority marking of transport parameters of MPS for DTS signalling and media, and
- QoS characteristics of MPS for DTS signalling and media.

### 10.1.3 Void

### 10.1.4 MPS for Messaging services

#### 10.1.4.1 General

For a UE or IoT device with WLAN access to the EPC/5GC, the system shall support the requirements in clause 9.4 on MPS for Messaging supported using IMS Messaging, SMS and/or MMS, or MSGin5G.

#### 10.1.4.2 Authentication and authorization

For a UE or IoT device with a 3GPP subscription for MPS and with WLAN access to the EPC/5GC, the system shall support MPS for Messaging authorization based on the UE subscription information.

For an authorized enterprise network that is activating MPS for Messaging for a remote UE or IoT device with a 3GPP subscription for MPS, the system shall support MPS for Messaging authorization based on the UE or IoT device subscription information.

#### 10.1.4.3 WLAN interworking

For a UE or IoT with WLAN access to the EPC/5GC, the 3GPP system shall support delivery of the following to the WLAN:

- indication of MPS for Messaging authorization,
- priority marking of transport parameters of MPS for Messaging signalling and media, and
- QoS characteristics of MPS for Messaging signalling and media.

## Annex A (informative): Change history

Change history											
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
SP-37	SP-070576	-	22.146	-	-	Rel-8	-	Raised to v.2.0.0 by MCC for approval as v.8.0.0	1.3.0	2.0.0	PRIOR
SP-37	-	-	22.146	-	-	Rel-8	-	Raised to v.8.0.0 by MCC following SA#37 approval	2.0.0	8.0.0	PRIOR
SP-40	SP-080305	S1-080438	22.153	0004	-	Rel-8	D	CR to TS 22.153 on applicability of MPS	8.0.0	8.1.0	PRIOR
SP-40	SP-080310	S1-080727	22.153	0003	1	Rel-9	B	CR to TS 22.153 on an optional service invocation method for MPS	8.0.0	9.0.0	ePRIOR
SP-41	SP-080494	-	22.153	0006	1	Rel-9	A	Trusted domain support	9.0.0	9.1.0	PRIOR
SP-42	SP-080778	S1-084394	22.153	0007	3	Rel-9	F	Correction to priority levels and networks	9.1.0	9.2.0	EPRIOR
SP-42	SP-080778	S1-084365	22.153	0008	1	Rel-9	C	Indication of MPS	9.1.0	9.2.0	EPRIOR
SP-47	SP-100188	S1-100101	22.153	0011	-	Rel-10	F	Clarification of MPS Service Aspects - Video and Data Bearer service	9.2.0	10.0.0	TEI10
SP-47	SP-100188	S1-100458	22.153	0012	3	Rel-10	B	Priority for data bearer services	9.2.0	10.0.0	TEI10
SP-49	SP-100580	S1-102180	22.153	0013	-	Rel-10	B	Priority for data bearer services	10.0.0	10.1.0	TEI10
SP-51	SP-110172	S1-110182	22.153	0014	2	Rel-11	F	Clarifying PS to CS handover requirements for multimedia priority calls	10.1.0	11.0.0	TEI11
SP-52	SP-110376	S1-111413	22.153	0016	1	Rel-11	B	Priority treatment for Network Management functions	11.0.0	11.1.0	TEI11
SP-52	SP-110376	S1-111414	22.153	0017	1	Rel-11	C	Clarification of Priority Information	11.0.0	11.1.0	TEI11
2014-10	-	-	-	-	-	-	-	Update to Rel-12 version (MCC)	11.1.0	12.0.0	
2015-06	-	-	-	-	-	-	-	Update to Rel-13 version (MCC)	12.0.0	13.0.0	
SP-68	SP-150270	S1-151607	22.153	0019	3	Rel-14	C	Additions to MPS description	12.0.0	14.0.0	MPS_Mod s
SP-68	SP-150270	S1-151540	22.153	0020	2	Rel-14	C	MPS Policy Control	12.0.0	14.0.0	MPS_Mod s
SP-68	SP-150270	S1-151542	22.153	0021	2	Rel-14	C	Priority in Advance of Service Invocation	12.0.0	14.0.0	MPS_Mod s
SP-69	SP-150537	S1-152174	22.153	0022	-	Rel-14	F	MPS exemption from load rebalancing	14.0.0	14.1.0	MPS_Mod s
SP-69	SP-150537	S1-152681	22.153	0024	3	Rel-14	F	MPS priority during initial Attach	14.0.0	14.1.0	MPS_Mod s
SP-70	SP-150751	S1-154442	22.153	0025	1	Rel-14	F	Addition of end-to-end-cases in general description	14.1.0	14.2.0	MPS_Mod s
SP-70	SP-150751	S1-154443	22.153	0026	1	Rel-14	F	Clarification of high level MPS requirements.	14.1.0	14.2.0	MPS_Mod s
SP-70	SP-150751	S1-154444	22.153	0027	1	Rel-14	F	Fix inconsistent requirements on invocation of MPS priority.	14.1.0	14.2.0	MPS_Mod s
SP-70	SP-150751	S1-154445	22.153	0028	1	Rel-14	B	MPS security requirements	14.1.0	14.2.0	MPS_Mod s
SP-71	SP-160097	S1-160332	22.153	0029	1	Rel-14	F	Text alignment for terminating UE option	14.2.0	14.3.0	MPS_Mod s
SP-71	SP-160097	S1-160333	22.153	0030	1	Rel-14	F	Update to Priority Data Bearer Service	14.2.0	14.3.0	MPS_Mod s
SP-71	SP-160097	S1-160334	22.153	0031	1	Rel-14	B	MPS Anonymity Requirement	14.2.0	14.3.0	MPS_Mod s
SP-72	SP-160356	S1-161096	22.153	0032		Rel-14	D	Editorial Corrections	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161097	22.153	0033		Rel-14	F	Update to Handover Materials	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161099	22.153	0035		Rel-14	F	Update on Number of Priority Levels	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161102	22.153	0038		Rel-14	F	Clarification of CS Domain Interworking	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161442	22.153	0036	1	Rel-14	F	Alignment of requirement for priority before service invocation	14.3.0	14.4.0	MPS_Mod s

SP-72	SP-160356	S1-161443	22.153	0037	1	Rel-14	F	MPS priority for CS fallback	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161445	22.153	0040	1	Rel-14	F	Correction of MPS Roaming Requirement	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161558	22.153	0039	3	Rel-14	B	QoS for MPS	14.3.0	14.4.0	MPS_Mod s
SP-72	SP-160356	S1-161559	22.153	0034	2	Rel-14	B	Service code for MPS	14.3.0	14.4.0	MPS_Mod s
2018-06	-	-	-	-	-	Rel-15	-	Raised to Rel-15 by MCC	14.4.0	15.0.0	-
2019-09	-	-	-	-	-	Rel-16	-	Created by MCC due to Rel-17 CR#0041 and 42	15.0.0	16.0.0	-

Change history												
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment						New version
2019-09	SA#85	SP-190867	0041	3	B	Common MPS Voice, Video and Data updates based on TR 22.854, MPS Phase 2 Feasibility Study						17.0.0
2019-09	SA#85	SP-190806	0042	2	B	MPS service specific updates based on TR 22.854, MPS Phase 2 Feasibility Study						17.0.0
2019-12	SA#86	SP-191018	0044	1	D	Editorial clean-up to close out MPS Phase 2 additions						17.1.0
2019-12	SA#86	SP-191018	0045	3	B	Attestation of Authorized MPS Priority Markings						17.1.0
2019-12	SA#86	SP-191018	0046	1	B	Addition of requirements to upgrade an established MMTEL voice call to MPS						17.1.0
2019-12	SA#86	SP-191018	0043	3	F	Clarifications on MPS2 requirements and terminology						17.1.0
2020-12	SA#90e	SP-201027	47	0	D	Editorial Cleanup of MPS Phase 2 Additions						17.2.0
2020-12	SA#90e	SP-201027	48	1	F	Alignment of descriptive text with associated requirement for MPS invocation from a non-subscribed UE						17.2.0
2021-09	SA#93e	SP-211072	0049	1	B	MPS when access to EPC/5GC is WLAN (MPS_WLAN)						18.0.0
2021-09	SA#93e	SP-211039	0050	1	B	Fallback in 5GS						18.0.0
2021-12	SP-94	SP-211492	0052	1	D	Editorial correction of reference (Rel-18 Mirror)						18.1.0
2021-12	SP-94	SP-211492	0054	1	F	MPS for DTS description alignment (Rel-18 Mirror)						18.1.0
2021-12	SP-94	SP-211501	0055	1	B	MPS and Supplementary Services Interactions						18.1.0
2022-09	SA#97	SP-220940	0056	1	B	MPS for Messaging services						19.0.0
2023-06	SA#100	SP-230531	0060		A	Correction to MPS requirements						19.1.0
2023-06	SA#100	SP-230532	0061	1	B	MPS for Messaging when access is WLAN						19.1.0
2023-06	SA#100	SP-230535	0062	2	B	Multiple Access Technologies						19.1.0
2024-09	SA#105	SP-241143	0065	1	A	MPS Subscription Alignment						19.2.0
2024-09	SA#105	SP-241143	0070		A	Editorial Correction						19.2.0

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# History

<b>Document history</b>		
V19.2.0	January 2026	Publication