

**Fixed network Multimedia Messaging Service (F-MMS);  
Part 9: Combined PSTN/ISDN and broadband access;  
Multimedia Message communication between a fixed  
network Multimedia Messaging Terminal Equipment and a  
Multimedia Messaging Service Centre**

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Reference

DES/AT-030035

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Keywords

IP, ISDN, MMS, PSTN, SMS, xDSL

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## Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Access and Terminals (AT).

The present document is part 9 of a multi-part deliverable covering the Fixed network Multimedia Messaging Service (F-MMS), as identified below:

- TS 102 314-1: "Overview";
- ES 202 314-2: "PSTN/ISDN; Service description";
- TR 102 314-3: "Network architecture and interconnection";
- ES 202 314-4: "PSTN/ISDN; Multimedia Message communication between a fixed network Multimedia Messaging Terminal Equipment and a Multimedia Messaging Service Centre";
- ES 202 314-5: "ISDN; Digital Subscriber Signalling System No. One (DSS1) protocol, Signalling System No.7 (SS7) - ISDN User Part (ISUP), and interworking between DSS1 and ISUP";
- TR 102 314-6: "Control strings (service codes) for MMS functions and MMS supplementary services";
- TS 102 314-7: "Over-The-Line configuration of F-MMS terminal settings";
- ES 202 314-8: "Combined PSTN/ISDN and broadband access; Service description";
- ES 202 314-9: "Combined PSTN/ISDN and broadband access; Multimedia Message communication between a fixed network Multimedia Messaging Terminal Equipment and a Multimedia Messaging Service Centre".**

NOTE: The parts above refer to the active work items and published standards within ETSI. These work items do not include purely IP-based MMS.

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## Introduction

Following the success of Multimedia Messaging Service (MMS) in mobile networks, ETSI has produced a set of specifications to define MMS for fixed networks. An overview about these specifications can be found in TS 102 314-1[1].

The Multimedia Messaging Service for PSTN/ISDN as defined by ETSI follows the philosophy of adopting the existing Multimedia Messaging Service of the mobile networks as widely as possible to:

- simplify the interworking with the existing mobile net MMS;
- offer the same user experience for both fixed and mobile net users;
- reduce the fixed net MMS implementation efforts.

Following this philosophy, the Multimedia Message communication between a fixed network Multimedia Messaging Terminal Equipment and a Multimedia Messaging Service Centre using a Combined PSTN/ISDN and broadband access as defined by the present document, has been derived from the respective mechanisms described in parts 2 and 4 of the multipart deliverable for MMS for fixed networks (see overview document TS 102 314-1[1]) and used in mobile networks, respectively.

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# 1 Scope

The present document describes the communication between a fixed net Multimedia Messaging Terminal Equipment (MMTE) and a Multimedia Messaging Service Centre (MMSC) in case that the MMTE uses a combination of packet-switched (broadband) and circuit-switched subscriber line.

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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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

- [1] ETSI TS 102 314-1: "Fixed network Multimedia Messaging Service (F-MMS); Part 1: Overview".
- [2] ETSI ES 202 314-4: "Fixed network Multimedia Messaging Service (F-MMS); Part 4: PSTN/ISDN; Multimedia Message communication between a fixed network Multimedia Messaging Terminal Equipment and a Multimedia Messaging Service Centre".
- [3] ETSI ES 201 912: "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Short Message Communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre".
- [4] IETF RFC 2516: "A Method for Transmitting PPP Over Ethernet (PPPoE)".
- [5] IETF RFC 2617: "HTTP Authentication: Basic and Digest Access Authentication".

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# 3 Definitions and abbreviations

## 3.1 Definitions

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

**MM service environment:** collection of MMS-specific infrastructure elements under the control of a single administration

**MMS relay/server:** MMS-specific network entity/application that is under the control of an MMS service provider

NOTE: An MMS Relay/Server transfers messages, provides operations of the MMS that are specific to or required by the network environment and provides (temporary and/or persistent) storage services to the MMS.

**MMS user agent:** application residing on a fixed net or mobile net terminal or an external device that performs MMS-specific operations on a user's behalf. An MMS User Agent is not considered part of an MMSE

**MM terminal equipment:** Terminal Equipment containing an MMS User Agent and an appropriate MMS user interface

**MM terminal:** See MM Terminal Equipment.

**Multimedia Message Entity (MME):** MM endpoint which may send or receive Multimedia Messages

NOTE: An MMTE may contain one or more Multimedia Message Entities. Each entity may be assigned to a particular user and as a terminal option, for privacy reasons, the access to each entity may be protected e.g. by a PIN.

**MME subaddress:** address used for the addressing of a Multimedia Message to a specific Multimedia Message Entity (MME) connected to one fixed net subscriber line

NOTE: The addressed MME may be one of the Multimedia Message Terminals connected in parallel to one subscriber line, as well as one of the Multimedia Message Entities contained in a Multimedia Message Terminal. The MME subaddress length is one digit in the range 0 to 9.

## 3.2 Abbreviations

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

3GPP	3rd Generation Partnership Project
CLI	Calling Line Identity
DSL	Digital Subscriber Line
F-MMS	Fixed network MMS
F-MMSC	Fixed network MMSC
F-MMSE	Fixed network MMSE
FSK	Frequency Shift Keying
F-SMS	Fixed network SMS
F-SMSC	Fixed network SMSC
HTTP	HyperText Transfer Protocol
IETF	Internet Engineering Task Force
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISUP	ISDN User Part
MM	Multimedia Message
MME	Multimedia Message Entity
MMS	Multimedia Messaging Service
MMSC	Multimedia Messaging Service Centre
MMSE	Multimedia Messaging Service Environment
MMTE	Multimedia Messaging Terminal Equipment
NT	Network Termination
PIN	Personal Identification Number
PPP	Point to Point Protocol
PPPoE	PPP over Ethernet
PSTN	Public Switched Telephone Network
RAS	Remote Access Service
RFC	Request For Comments
SM	Short Message(s)
SMS	Short Message Service
SMSC	Short Message Service Centre
xDSL	x Digital Subscriber Line

EXAMPLE: Asymmetric DSL (ADSL)

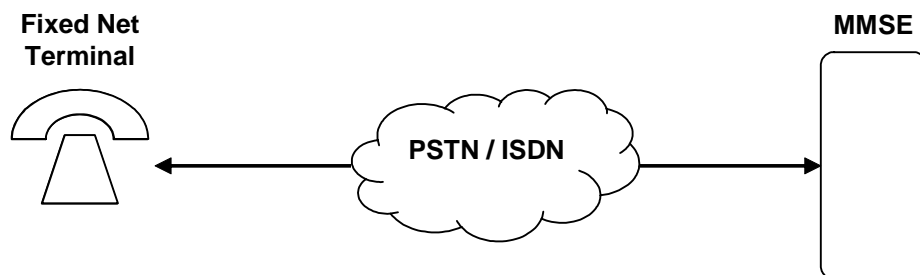
## 4 Overview

The example figures in the present document depict typical xDSL configurations. Besides these example scenarios, the broadband access may also be provided via e.g. Cable, Fibre, Satellite etc. However, this does not have an influence on the requirements stated in the present document.

### 4.1 Scenario for MMS via PSTN/ISDN (informative)

In this scenario, the transfer of Multimedia Messages (MM) is limited to the bandwidth available to either ISDN access (one or more b-channels) or PSTN access (modem speed). Non-push-based MM transactions (e.g. MM Submission, MM Retrieval etc.) are handled via IP using modem protocols via PSTN/ISDN. Push-based MM transactions (e.g. MM Notification etc.) are handled using SMS via PSTN/ISDN.

This scenario is already described in ES 202 314-4 [2].



NOTE: The MMSE in figure 1 symbolizes all MM Service elements necessary to provide the MM Service via PSTN/ISDN (i.e. the MMS Relay/Server, the SMSC, etc).

**Figure 1: Scenario for MMS via PSTN/ISDN**

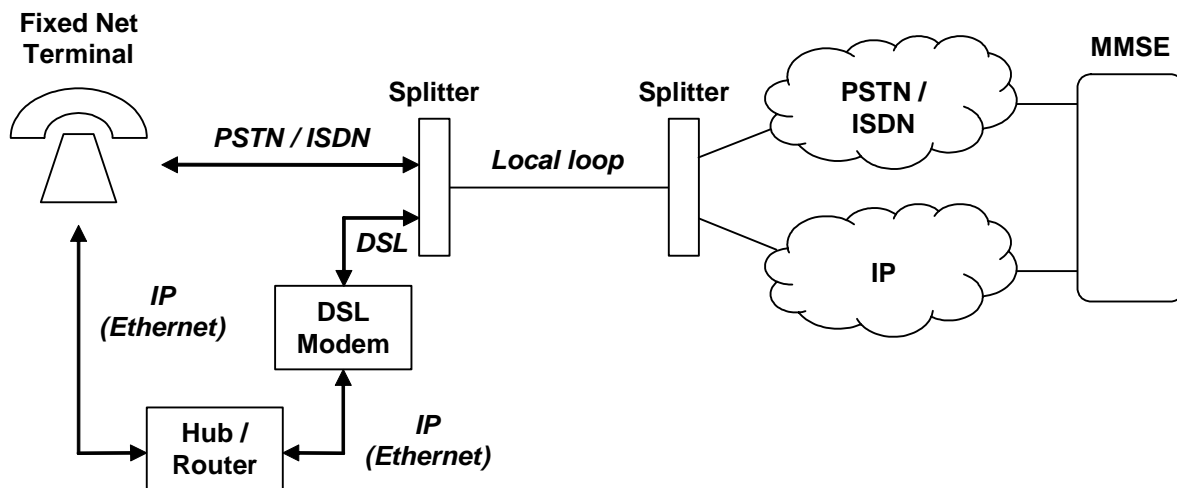
### 4.2 Scenario for MMS via combined PSTN/ISDN and broadband access

This scenario allows the transfer of MM via broadband access (e.g. xDSL), thus providing much higher bandwidth than the PSTN/ISDN scenario above. Non-push-based MM transactions (e.g. MM Submission, MM Retrieval etc.) are handled via IP using broadband access. Push-based MM transactions (e.g. MM Notification etc.) are handled using SMS via PSTN/ISDN, thus not requiring the establishment of additional servers etc. in the IP network that enable the pushing of information to the terminal.

This scenario is subject to the present document.



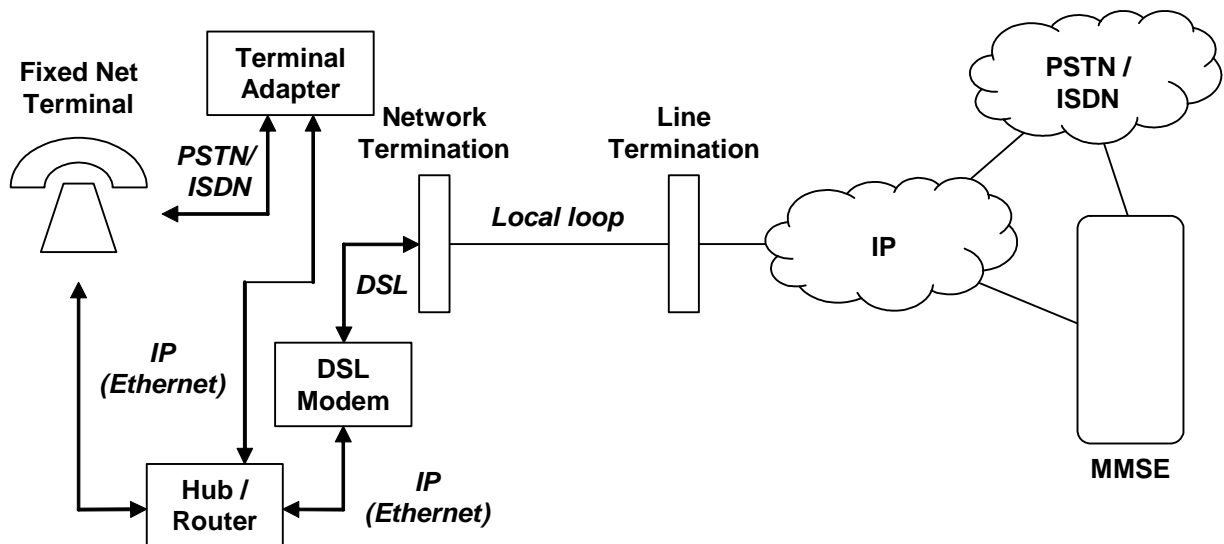
Figure 2 depicts an example scenario for MMS via combined PSTN/ISDN and broadband access using xDSL.



- NOTE 1: The Splitter, DSL modem and Ethernet Hub/Router may also be integrated into one or more devices. Some or all of these elements may also be integrated within the terminal. However, this does not have an influence on the requirements stated in the present document.
- NOTE 2: In the ISDN case, the necessary ISDN NT may be implemented separately or be integrated within the terminal or the Splitter. However, this does not have an influence on the requirements stated in the present document.
- NOTE 3: The MMSE in figure 2 symbolizes all MM Service elements necessary to provide the MM Service via combined PSTN/ISDN and broadband access (i.e. the MMS Relay/Server, the SMSC, etc).

**Figure 2: xDSL example scenario for MMS via combined PSTN/ISDN and broadband access**

The alternative figure 3 depicts an example scenario for MMS via combined PSTN/ISDN and broadband access using xDSL where PSTN/ISDN is provided over IP.



- NOTE 1: The DSL modem, Ethernet Hub/Router and Terminal Adapter may also be integrated into one or more devices. Some or all of these elements may also be integrated within the terminal. However, this does not have an influence on the requirements stated in the present document.
- NOTE 2: In case of insufficient quality of the provision of PSTN/ISDN in the implementation depicted in figure 3, FSK signal detection problems may occur making SMS transmission difficult.
- NOTE 3: The MMSE in figure 3 symbolizes all MM Service elements necessary to provide the MM Service via combined PSTN/ISDN and broadband access (i.e. the MMS Relay/Server, the SMSC, etc).

**Figure 3: xDSL example scenario for MMS via combined PSTN/ISDN and broadband access where PSTN/ISDN is provided "over IP"**

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## 5 MMS via combined PSTN/ISDN and broadband access

The implementation of MMS via combined PSTN/ISDN and broadband access differs from the implementation of MMS via PSTN/ISDN as defined by ES 202 314-4 [2] only in the bearer used for the non-push-based MM transactions. This however implies also differences in the authentication mechanism.

NOTE: For details about push-based and non-push-based MM transactions see ES 202 314-4 [2].

All necessary modifications of ES 202 314-4 [2] to enable MMS via combined PSTN/ISDN and broadband access are described in the present document.

### 5.1 Bearers

#### 5.1.1 Bearer for non-push-based MM transactions

In ES 202 314-4 [2], a transparent PSTN/ISDN voice modem connection is used as bearer for non-push-based MM transactions like MM Submission, MM Retrieval and MM Read Report (recipient side).

For MMS via combined PSTN/ISDN and broadband access as defined in the present document, the broadband access (e.g. xDSL) is used as bearer for non-push-based MM transactions, thus providing much higher bandwidth.

Therefore, differently from ES 202 314-4 [2], in case that non-push-based MM transactions are to be performed, in case that there is not an already existing connection to the IP network, the MMTE establishes a connection to the IP network (i.e. the Internet) via its broadband (e.g. xDSL) access, connects to the MMSC via an F-MMS Gateway and performs the respective non-push-based MM transaction using the established IP connection as defined in ES 202 314-4 [2].

This process may require two different authentication steps. In the first step, the MMTE may need to authenticate to the ISP using PPPoE (see RFC 2516 [4]) in order to connect to the IP network (i.e. the Internet). This first authentication is not related to the MM Service but subject to the ISP connection setup and is out of scope of the present document. In the second step, the MMTE needs to authenticate to the MMS Provider. This authentication is described in the following clause.

After the respective MM transactions are performed, the MMTE may release the connection to the IP network or may keep the connection for other non-push-based MM transactions.

#### 5.1.2 Bearer for push-based MM transactions

As defined in ES 202 314-4 [2], SMS via PSTN/ISDN as described in ES 201 912 [3] is used as bearer for push-based MM transactions like MM Notification, MM Deliver Report and MM Read Report (originator side).

## 5.2 Authentication

### 5.2.1 Authentication to the MMS Service

In ES 202 314-4 [2], the authentication of the user is preferably based on the CLI information delivered by the network to the RAS (F-MMS Gateway) when the MMTE dialled-in to the RAS. Optionally ES 202 314-4 [2] allows the RAS (F-MMS Gateway) also to require an authentication on PPP layer via username and password.

For MMS via combined PSTN/ISDN and broadband access as defined in the present document, when the MMTE connects to the F-MMS Gateway via its broadband (e.g. xDSL) access using IP, the MMS Provider does not necessarily get the address (i.e. the E.164 number and the Subaddress) of the connecting user from the respective Internet Provider.

Therefore, the connecting user shall be authenticated by the MMSE via username and password on HTTP layer using HTTP Digest Access Authentication according to RFC 2617 [5].

Based on the username/password combination supplied by the user when authenticating to the MMSC, the MMSC shall refer to the MMSC user database to establish the related address of the user (i.e. the E.164 number, including Subaddress if applicable) in case that it is required for the handling of the respective MM transaction.

## 5.2.2 Authentication to the SMS Service

No MMS-specific authentication to the SMSC is necessary. The SMS service is used as defined in ES 202 314-4 [2], which further refers to ES 201 912 [3].

## 5.3 MMTE requirements

In order to support MMS via combined PSTN/ISDN and broadband access, the MMTE shall be connected to both PSTN/ISDN and broadband (e.g. xDSL, possibly via a DSL router). In order to be able to accept push-based MM transactions, the MMTE shall furthermore support the SMS service as described in ES 201 912 [3] and the related requirements stated in ES 202 314-4 [2].

Additionally, it shall support HTTP Digest Access Authentication according to RFC 2617 [5].

Furthermore, instead of the requirement to store one username/password combination stated in ES 202 314-4 [2], it shall provide the possibility to store one username/password combination for authentication to the ISP (out of scope of the present document). For authentication to the MMSE, in case the MMTE does not support MM Subaddressing, it shall provide the possibility to store one username/password combination. In case the MMTE supports MM Subaddressing, it shall provide the possibility to store one username/password combination for each of the MM Subaddresses supported by the MMTE.

The requirement to store RAS (F-MMS Gateway) numbers as stated in ES 202 314-4 [2], clause "Network access", in clause "MMTE requirements" is not applicable in case of MMS via combined PSTN/ISDN and broadband access.

For all parameters being relevant for MMS via combined PSTN/ISDN and broadband access, the field lengths shall apply as stated in ES 202 314-4 [2].

## 5.4 MMSE requirements

In order to support MMS via combined PSTN/ISDN and broadband access, the MMSE shall provide the possibility to access the MMS Relay/Server via IP network (i.e. the Internet). To authenticate the user, instead of using CLI as described in ES 202 314-4 [2], it shall require HTTP Digest Access Authentication according to RFC 2617 [5].

In case that the MMSE does not support MM Subaddressing, it shall provide the user with one unique username/password combination for authentication to the MMSE. The username may contain or be identical to the user's phone number.

In case that the MMSE supports MM Subaddressing, it shall provide the user with one unique username/password combination for each MM Subaddress. In this case, the username may be composed of the user's phone number and the respective subaddress.

For security reasons, the MMSE shall furthermore request the MMTE to authenticate as often as it is required by the security policy of the MMS Provider (e.g. upon each non-push-based MM transaction).

The requirement to provide a RAS (F-MMS Gateway) for PSTN/ISDN dialling-in using modem protocols as stated in ES 202 314-4 [2], clause "Bearer for IP-based transactions", in clause "MMSE requirements" is not applicable in case of MMS via combined PSTN/ISDN and broadband access, but recommended in order to enable the use of MMTE's supporting MMS via combined PSTN/ISDN and broadband access, but being connected via PSTN/ISDN only.

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## Annex A (informative): Bibliography

ETSI ES 202 314-8: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Fixed network Multimedia Messaging Service (F-MMS); Part 8: Combined PSTN/ISDN and broadband access; Service description".

ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

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## History

<b>Document history</b>		
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