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**Integrated Services Digital Network (ISDN);
Message Waiting Indication (MWI) supplementary service;
Service description**



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN), and is now submitted for the ETSI standards One-step Approval Procedure.

In accordance with ITU-T Recommendation I.130 [4], the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's stand-point;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

The present document is a revised version according to the new SPAN2 work item of the ETS 300 650 [8] that details the stage 1 aspects (overall service description) for the Message Waiting Indication (MWI) supplementary service. The stage 3 aspects are detailed in ETS 300 745-1 [9] and ETS 300 754-1 [10].

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document defines the stage one of the Message Waiting Indication (MWI) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public network operators. Stage one is an overall service description from the user's point of view (see ITU-T Recommendation I.130 [4]), but does not deal with the details of the human interface itself.

The present document defines the interworking requirements of private ISDNs with the public ISDN.

Interactions with supplementary services not listed in clause 7 are outside the scope of the present document.

The MWI supplementary service is provided independently of a call and is therefore applicable to a number of telecommunication services.

Charging principles are outside the scope of the present document.

The MWI supplementary service enables the network, upon the request of a controlling user to indicate to the receiving user, that there is at least one message waiting.

NOTE: The MWI supplementary service is typically used between a mailbox service provider (controlling user) and a user (receiving user) of the mailbox service provided.

The present document is applicable to the stage two and stage three standards for the ISDN MWI supplementary service. The terms "stage two" and "stage three" are also defined in ITU-T Recommendation I.130 [4]. Where the text indicates the status of a requirement (i.e., as strict command or prohibition, as authorization leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

Furthermore, conformance to the present document is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for the present document.

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.

- [1] ETSI ETS 300 345 (1994): "Integrated Services Digital Network (ISDN); Interworking between public ISDNs and private ISDNs for the provision of telecommunication services; General aspects".
- [2] ITU-T Recommendation E.164 (1997): "The international public telecommunication numbering plan".
- [3] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [4] ITU-T Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [5] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [6] ITU-T Recommendation I.221 (1993): "Common specific characteristics of services".
- [7] ITU-T Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

- [8] ETSI ETS 300 650 (1998): "Integrated Services Digital Network (ISDN); Message Waiting Indication (MWI) supplementary service; Service description".
- [9] ETSI ETS 300 745-1 (1997): "Integrated Services Digital Network (ISDN); Message Waiting Indication (MWI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [10] ETSI ETS 300 754-1 (1997): "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC); Application Service Element (ASE) for Message Waiting Indication (MWI) supplementary service; Part 1: Protocol specification".

3 Definitions and abbreviations

3.1 Definitions

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

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [3], clause 2.3, definition 308

service; telecommunications service: see ITU-T Recommendation I.112 [3], clause 2.2, definition 201

supplementary service: see ITU-T Recommendation I.210 [5], clause 2.4

ISDN number: number conforming to the numbering plan and structure specified in ITU-T Recommendation E.164 [2]

receiving user: user that receives the message waiting indication

controlling user: user that activates and deactivates the MWI supplementary service

NOTE: The controlling user is likely to be a mail box.

basic call procedures: procedures by which a call (as an instance of a telecommunications service) is established and terminated

basic access: see ITU-T Recommendation Q.9 [7], clause 1, definition 1551

primary rate access: see ITU-T Recommendation Q.9 [7], clause 1, definition 1552

network operator: entity which provides the network operating elements and resources for the execution of the MWI supplementary service

service provider: entity which offers the MWI supplementary service. The network operator may be the service provider

mail box: system, inside or outside the public network infrastructure, capable to handle mail

3.2 Abbreviations

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

MWI	Message Waiting Indication
ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network

4 Description

The Message Waiting Indication (MWI) supplementary service shall be available to users who are connected to the network via a basic access or primary rate access.

The MWI supplementary service enables the network, upon the request of a controlling user to indicate to the receiving user, that there is at least one message waiting. The indication is delivered to the receiving user:

- when the MWI supplementary service is activated for a certain basic service and the receiving user makes an outgoing call attempt; and/or
- as soon as the MWI supplementary service has been activated or deactivated.

NOTE: Having received this indication, the receiving user can subsequently access the mail box, to have the mail delivered. The means by which the receiving user accesses and manages the mail box are outside the scope of the present document.

5 Procedures

5.1 Provision and withdrawal

The MWI supplementary service shall be provided to the controlling user after prior arrangement with the service provider. The MWI supplementary service shall be withdrawn at the controlling user's request, or for administrative reasons.

The MWI supplementary service shall be provided to the receiving user after prior arrangement with the service provider. The MWI supplementary service shall be withdrawn at the receiving user's request, or for administrative reasons. As a network option, the receiving user can have a subscription option to register the controlling user numbers that can activate and deactivate the MWI supplementary service. The maximum number of controlling user's ISDN numbers that can be registered for a receiving user is a further network option.

Table 1

Network options	Values
Support of subscription option for registration of the ISDN number(s) of the controlling user(s):	- yes - no
Provide additional information during deferred invocation:	- yes - no
Maximum number of controlling users' ISDN numbers registered for a receiving user:	any integer value
Maximum number of active instances per receiving user:	any integer value

Provision of the MWI supplementary service shall be possible on an access or ISDN number basis.

In addition, the following subscription options shall be made available to the receiving user:

Table 2

Subscription options	Values
Invocation mode:	a) deferred mode: invocation when the supplementary service is activated and the receiving user makes an outgoing call; b) immediate mode: invocation as soon as the supplementary service has been activated or deactivated; c) combined mode: in this case both the deferred and immediate mode apply.
Override of invocation mode by controlling user allowed:	- yes - no
Registration of the ISDN number(s) of the controlling user(s):	- yes - no

5.2 Normal procedures

5.2.1 Activation, deactivation and registration

5.2.1.1 Activation

To activate the MWI supplementary service for a specific receiving user, the controlling user shall request this to the network and provide the following parameters:

- the receiving user's ISDN number;
- the applicable basic service; and as a controlling user's option:
 - invocation mode;
 - the number of messages waiting for the indicated receiving user and basic service;
 - message identity with an indication whether this is a new message or a removed message;
 - the date/time provided by the controlling user (e.g. relating to the indicated message (note 1)); and

NOTE 1: The precise meaning of the date/time provided by the controlling user is defined by the controlling user and is outside the scope of the present document.

- the ISDN number provided by the controlling user (e.g. the original calling user relating to the indicated message (note 2)).

NOTE 2: The precise meaning of the ISDN number provided by the controlling user is defined by the controlling user and is outside the scope of the present document.

If the deferred mode applies (see clause 5.2.3) then, if the request to activate the MWI supplementary service for the indicated receiving user is accepted by the network, the network shall inform the controlling user.

If the immediate mode applies (see clause 5.2.3), the activation from the controlling user will imply an invocation of the service for the receiving user as specified in clause 5.2.3. When the request is accepted by the network, the network shall inform the controlling user.

If the combined mode applies, the activation from the controlling user will imply an invocation of the service for the receiving user as specified in clause 5.2.3 (immediate and deferred mode). When the request is accepted by the network, the network shall inform the controlling user.

If the receiving user allows override of the invocation mode and the controlling user has indicated the invocation mode, the activation shall be performed according to the mode indicated by the controlling user (deferred, immediate or combined).

The network shall use the receiving user's ISDN number, the controlling user's ISDN number and the indicated basic service to determine the instance of the MWI supplementary service to be activated.

The controlling user can subsequently activate the service without deactivating the service first. In this case, when the deferred mode applies, the new activation will replace the existing activation.

NOTE 3: Subsequent activations of an active instance are used to update the stored information.

5.2.1.2 Deactivation

To deactivate the MWI supplementary service for a specific receiving user the controlling user shall request this to the network and provide the following parameters:

- the receiving user's ISDN number; and
- the applicable basic service;
- invocation mode.

If the deferred mode applies then, if the request to deactivate the MWI supplementary service for the indicated receiving user is accepted by the network, the network shall inform the controlling user.

If the immediate mode applies then, the deactivation from the controlling user will imply an invocation of the service for the receiving user as specified in clause 5.2.3, indicating that no messages are available. When the request is accepted by the network and the invocation of the service has been successful, the network shall inform the controlling user.

If the combined mode applies then, the deactivation from the controlling user will imply an invocation of the service for the receiving user as specified in clause 5.2.3, indicating that no messages are available in the mailbox. When the request is accepted by the network, the network shall inform the controlling user.

If the receiving user allows override of the invocation mode and the controlling user has indicated the invocation mode, the deactivation shall be performed according to the mode indicated by the controlling user (deferred, immediate or combined).

The network shall use the receiving user's ISDN number, the controlling user's ISDN number and the indicated basic service to determine the instance of the MWI supplementary service to be deactivated.

NOTE: Deactivation is requested by the controlling user for controlling user reasons, e.g. when all messages for a specific receiving user and basic service have been accessed and treated (e.g. listened to).

5.2.1.3 Registration

Not applicable.

5.2.2 Erasure

Not applicable.

5.2.3 Invocation and operation

Three modes of invocation are possible (see table 2). If the deferred mode applies, then when the receiving user makes an outgoing call attempt, and the MWI supplementary service has been activated by one or more controlling users for this receiving user, the MWI supplementary service shall be invoked and the network shall provide a MWI.

As a network option this indication shall contain for each active instance of the MWI supplementary service, the basic service and the ISDN number associated with the controlling user that activated the MWI supplementary service. If available, the indication shall also include the number of messages waiting for the receiving user, the date/time relating to the indicated message and the ISDN number provided by the controlling user relating to the indicated message.

The MWI shall be sent after each outgoing call attempt until the network receives a deactivation request for the active instance.

If the immediate mode applies, then after the MWI supplementary service has been activated by the controlling user for this receiving user, the network shall provide a MWI to that user indicating the basic service and the ISDN number associated with the controlling user that activated the MWI supplementary service. The network shall provide this indication independent of the presence of a call. If available, the indication shall include:

- the number of messages waiting for the receiving user;
- the date/time relating to the indicated message;
- the ISDN number provided by the controlling user relating to the indicated message; and
- the message identity including information concerning adding/removal of the message.

In the case the MWI supplementary service has been deactivated the network shall provide a MWI to that user indicating the basic service, that no messages are available and the ISDN number associated with the controlling user that deactivated the service. The network shall provide this indication independent of the presence of a call.

If the combined mode applies the procedures for the deferred and immediate mode shall both apply.

If the receiving user allows override of the invocation mode and the controlling user has indicated the invocation mode, the invocation shall be performed as specified in this clause and according to the mode indicated by the controlling user (deferred, immediate or combined).

NOTE: The characteristics of the MWI to the human user is outside the scope of the present document. However, the indication may be, e.g. a visual indication, or alternatively a special dial tone or announcement.

5.2.4 Interrogation

Not applicable.

5.3 Exceptional procedures

5.3.1 Activation, deactivation and registration

5.3.1.1 Activation

If the network cannot comply with the request to activate the MWI supplementary service, the network shall reject the request and indicate the reason. Reasons for rejecting the request are:

- the controlling user has not subscribed to the MWI supplementary service;
- the controlling user provided an invalid receiving user number;
- an interaction with another supplementary service prohibits the activation of the MWI supplementary service;
- the receiving user has not subscribed to the MWI supplementary service;
- the controlling user is not registered for the indicated receiving user;
- the MWI cannot be delivered to the receiving user;
- the maximum number of controlling users has been reached;
- maximum number of active instances has been reached.

5.3.1.2 Deactivation

If the network cannot comply with the request to deactivate the MWI supplementary service, the network shall reject the request and indicate the reason. Reasons for rejecting the request are:

- the controlling user has not subscribed to the MWI supplementary service;
- the controlling user provided an invalid receiving user number;
- an interaction with another supplementary service prohibits the deactivation of the MWI supplementary service;
- the receiving user has not subscribed to the MWI supplementary service;
- the controlling user is not registered for the indicated receiving user;
- the MWI cannot be delivered to the receiving user.

5.3.1.3 Registration

Not applicable.

5.3.2 Erasure

Not applicable.

5.3.3 Invocation and operation

Not applicable.

5.3.4 Interrogation

Not applicable.

6 Intercommunication considerations

6.1 Interworking with non-ISDNs

Users in the Public Switched Telephone Network (PSTN) may receive a MWI.

6.2 Interworking with private ISDNs

Public and private ISDNs shall cooperate in the provision of this service. This implies that:

- the receiving user can be a user in a private ISDN; and
- the controlling user can be a user in a private ISDN.

Interworking with private networks shall include the requirements given in ETS 300 345 [1]. Interworking shall take place in a co-operative manner.

7 Interaction with other supplementary services

7.1 Advice of charge services

7.1.1 Charging information at call set-up time

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.1.2 Charging information during the call

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.1.3 Charging information at the end of a call

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.2 Call waiting

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.3 Call hold

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.4 Explicit call transfer

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.5 Number identification services

7.5.1 Calling line identification presentation

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.5.2 Calling line identification restriction

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.5.3 Connected line identification presentation

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.5.4 Connected line identification restriction

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.6 Closed user group

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.7 Call completion services

7.7.1 Completion of calls to busy subscriber

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.7.2 Completion of calls on no reply

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.8 Conference services

7.8.1 Conference call, add-on

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.8.2 Meet-me conference

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.9 Direct dialling in

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.10 Diversion services

7.10.1 Call forwarding unconditional

The MWI shall never be diverted. The indication shall be given to the receiving user at the receiving user's original location.

7.10.2 Call forwarding busy

The MWI shall never be diverted. The indication shall be given to the receiving user at the receiving user's original location.

7.10.3 Call forwarding no reply

The MWI shall never be diverted. The indication shall be given to the receiving user at the receiving user's original location.

7.10.4 Call deflection

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.10.5 Selective call forwarding

The MWI shall never be diverted. The indication shall be given to the receiving user at the receiving user's original location.

7.11 Freephone

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.12 Malicious call identification

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.13 Multiple subscriber number

If the receiving user has subscribed to the multiple subscriber number supplementary service, the MWI can be activated for each assigned ISDN number individually.

In this case the MWI provided to the receiving user shall in addition contain the relevant receiving user's ISDN number.

If the controlling user has subscribed to the multiple subscriber number supplementary service, the controlling user can indicate in a request to (de)activate the MWI supplementary service a parameter with the applicable controlling user's number.

7.14 Subaddressing

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

NOTE: Subaddresses cannot be handled by the MWI supplementary service.

7.15 Terminal portability

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.16 Three party

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.17 User-to-user signalling

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.18 Line hunting

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.19 Outgoing call barring

7.19.1 User controlled outgoing call barring

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.19.2 Fixed outgoing call barring

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.20 Message waiting indication

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

7.21 Remote control

The remote control supplementary service is not applicable to the MWI supplementary service.

8 Interaction with other services

8.1 Universal access number

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.2 Card calling services

8.2.1 Charge card calling

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.2.2 Virtual card calling

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.3 Premium rate

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.4 Televoting

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.5 Universal personal telecommunications

Not applicable.

History

Document history		
Edition 1	June 1998	Publication as ETS 300 650
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