
**Information technology —
Telecommunications and information
exchange between systems — Private
Integrated Services Network —
Specification, functional model and
information flows — Message centre
monitoring and mailbox identification
supplementary services**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de
services — Spécification, modèle fonctionnel et flux d'informations —
Services supplémentaires de surveillance du centre du message et
d'identification de boîte aux lettres*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 20116 was prepared by ECMA (as ECMA-346) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

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Introduction

This International Standard is one of a series defining services and signalling protocols applicable to Private Integrated Services Networks (PISNs). The series uses ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC.

This particular International Standard specifies the Message Centre Monitoring and Mailbox Identification supplementary service.

SS-MCM is based on SS-MWI and includes its entire functionality. The interoperability with SS-MWI is guaranteed. Compared to SS-MWI, SS-MCM offers an enhanced functionality for monitoring status changes of messages stored in the Served User's Mailbox as follows:

- individual activation and deactivation for the monitoring of messages of different Message Type(s) within the Mailbox as well as interrogation of the actual SS-MCM configuration;
- retrieval of information about all messages (i.e. new and retrieved messages) in the mailbox independent of the Message Status;
- request of detailed updated information about messages stored in the mailbox at every time.

This International Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Message centre monitoring and mailbox identification supplementary services

1 Scope

This International Standard specifies supplementary service Message Centre Monitoring/Mailbox Identification (SS-MCM/MID), which is related, but not limited, to various basic services supported by Private Integrated Services Networks (PISNs). Basic services are specified in ISO/IEC 11574.

The supplementary service MCM enables a Served User to get informed by a Message Centre about the status and status changes of messages stored in that Served Users Mailbox.

The supplementary service MID enables a Message Centre to identify a specific mailbox of a Served User in case that the Served User has more than one Mailbox within the Message Centre. In addition SS-MID enables a Served User to authenticate himself/herself at a specific Mailbox located within the Message Centre.

Service specifications are produced in three stages, according to the method described in ETS 300 387. This International Standard contains the stage 1 and stage 2 specifications of SS-MCM/MID. The stage 1 specification (Clauses 6 and 7) specifies the supplementary service as seen by users of PISNs. The stage 2 specification (Clauses 8 and 9) specifies the functional entities involved in the supplementary service and the information flows between them.

2 Conformance

In order to conform to this International Standard, a stage 3 standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the supplementary service specified in this International Standard. This means that, to claim conformance, a stage 3 standard is required to be adequate for the support of those aspects of Clauses 6 and 7 (stage 1) and Clauses 8 and 9 (stage 2) which are relevant to the interface or equipment to which the stage 3 standard applies.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 11574:2000, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Circuit-mode 64 kbit/s bearer services — Service description, functional capabilities and information flows*

ISO/IEC 11579-1:1994, *Information technology — Telecommunications and information exchange between systems — Private integrated services network — Part 1: Reference configuration for PISN Exchanges (PINX)*

ISO/IEC 15505:2003, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Message Waiting Indication supplementary service*

ETS 300 387:1994, *Private Telecommunication Network (PTN); Method for the specification of basic and supplementary services*

ITU-T Rec. I.112:1993, *Vocabulary of terms for ISDNs*

ITU-T Rec. I.210:1993, *Principles of telecommunication services supported by an ISDN and the means to describe them*

ITU-T Rec. Z.100:1999, *Specification and Description Language*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1 External definitions

This International Standard uses the following terms defined in other documents:

- Private Integrated services Network eXchange (PINX) (ISO/IEC 11579-1)
- Private Integrated Services Network (PISN) (ISO/IEC 11579-1)
- Service (ITU-T Rec. I.112)
- Signalling (ITU-T Rec. I.112)
- Supplementary Service (ITU-T Rec. I.210)
- Telecommunication Service (ISO/IEC 11574)
- User (ISO/IEC 11574)

4.2 Other definitions

4.2.1

Address Header

The Address Header includes Originator address information and, optionally, the receiving time stamp and the priority of one specific message.

4.2.2

Complete Information

A complete list of Address Headers of either all New or all Retrieved Messages of one specific Message Type in a Mailbox.

4.2.3

Compressed Information

Includes the number of either all New or all Retrieved Messages of one specific Message Type. Optionally, in the compressed information the Originator address, the priority level and the time stamp of the highest priority message can be included. If there is more than one message of the highest priority the optional information shall be related to the latest received highest priority message.

4.2.4**Deleted Messages**

A message of any Message Type which was previously stored in the Mailbox but which is not available anymore due to deletion by the Served User.

4.2.5**Mailbox**

A logical entity within a Message Centre which stores all messages (New Messages and Retrieved Messages) of one or more Message Types for one specific Served User who is registered at the Message Centre.

4.2.6**Message Centre (MC)**

The entity within the network which administrates Mailboxes for Served Users. The MC provides the Served User with information

- about each incoming New Message in the Served User's Mailbox and
- about Message Status changes (e.g. due to retrieval or deletion) in the Served User's Mailbox

by means of Complete or Compressed Information for New and Retrieved Messages. This information is provided by update procedures.

4.2.7**Message Status**

Describes whether a stored message at the Served User's Mailbox is a New Message or a Retrieved Message.

4.2.8**Message Type**

The type of a message stored at the MC. A Message Type indicates either the telecommunication service (e.g. speech, 3.1kHz audio, etc.) that is needed to retrieve a specific message via a PISN or the general type of a message that might not be directly retrieved by means of a PISN (e.g. email or video).

4.2.9**Message Waiting Signal**

Any type of signal presented to a Served User's terminal that is useful to draw a Served User's attention to the arrival of a New Message in the Served User's Mailbox.

NOTE The indication may be a lamp, special tone, display string etc. The technical realisation of the Message Waiting Signal is outside the scope of this International Standard.

4.2.10**New Message**

A message of any Message Type, which is stored in a Mailbox. The Served User has not yet retrieved the message.

4.2.11**Originator**

The user who has left a message at the Served User's Mailbox.

4.2.12**Originator address**

Address information (i.e. Party Number) of the originator.

4.2.13**Retrieved Message**

A message of any type, which is stored in a Mailbox. The Served User has already retrieved but not deleted the message (i.e. the message is no longer a New Message).

4.2.14

Served User

The owner of a specific Mailbox at a Message Centre. The Served User receives an indication about status changes of the messages in the Served User's Mailbox from the Message Centre.

5 Acronyms

FE	Functional Entity
ISDN	Integrated Services Digital Network
MCM	Message Centre Monitoring
MID	Mailbox Identification
MWI	Message Waiting Indication
PINX	Private Integrated services Network eXchange
PISN	Private Integrated Services Network
SDL	Specification and Description Language
SS	Supplementary Service

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6 SS-MCM stage 1 specification

6.1 Description

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6.1.1 General description

The supplementary service MCM enables a Message Centre to inform a registered Served User about the status and status changes of messages stored in this Served Users Mailbox. This can be due to the arrival of New Messages or the change of the Message Status of stored messages (e.g. retrieval or deletion of messages). Additionally the Served User can request the current status of the messages in the Mailbox from the Message Centre.

If there are New Messages for the Served User stored in the Mailbox a Message Waiting Signal may be set at the Served User's terminal.

Additionally a Served User might activate, deactivate or interrogate Message Centre Monitoring individually for the different Message Types.

NOTE 1 The procedures for how the Served User accesses the messages stored in the MC is outside the scope of this International Standard.

NOTE 2 The procedures for how a message can be left in a Served User's Mailbox is outside the scope of this International Standard.

SS-MCM is based on SS-MWI (ISO/IEC 15505) and includes its entire functionality. Therefore the interoperability with SS-MWI is guaranteed. Compared to SS-MWI, SS-MCM offers an enhanced functionality for monitoring status changes of messages stored in the Served User's Mailbox as follows:

- individual activation and deactivation for the monitoring of messages of different Message Type(s) within the Mailbox as well as interrogation of the actual SS-MCM configuration;

- retrieval of information about all messages (i.e. New and Retrieved Messages) in the mailbox independent of the Message Status;
- request of detailed updated information about messages stored in the Mailbox.

6.1.2 Qualifications on applicability to telecommunication services

This supplementary service does not apply directly to any basic telecommunication service. However, MCM relates to a basic service for which there are messages stored in the Served User's Mailbox.

6.2 Procedures

6.2.1 Provision / withdrawal

SS-MCM may be provided or withdrawn after pre-arrangement with the service provider or may be generally available to all users.

6.2.2 Normal procedures

6.2.2.1 Activation, deactivation and interrogation

In general, SS-MCM shall be available for all Served Users in a default configuration as arranged by the service provider. The default configuration defines the messages (i.e. a set of Message Types) which can be stored in principle in a Served User's Mailbox. The default configuration also defines whether complete information or compressed information about the messages of each specific Message Type is sent to the Served User.

By sending an appropriate indication to the MC the Served User can individually modify the configuration in the following manner:

- <https://standards.iteh.ai/catalog/standards/sist/15f76cf2-f046-4c00-8bec-39f077185116/iso-20116-2004>
- activation of either one or more of the predefined Message Types so that changes in the Mailbox of that activated Message Types will be presented to the Served User. After that the MC shall perform the Update procedure as described in 6.2.2.2.2;
 - deactivation of either one or more of predefined Message Types so that changes in the Mailbox of that deactivated Message Types will not be presented to the Served User anymore. After that the MC shall perform the Update procedure as described in 6.2.2.2.2. In addition, an indication shall be given to the Served User stating that no information about New Messages or Retrieved Messages of this Message Type will be presented to the Served User while monitoring is deactivated;
 - changing of the presentation style of SS-MCM information from complete information to compressed information or from compressed information to complete information for a specific Message Type.

NOTE The change from compressed information to complete information (and vice versa) for a specific Message Type is only possible if the MC supports this option.

- Re-setting of all the changed SS-MCM parameters to the default configuration.

In addition, the Served User can interrogate at the MC to get information about the actual configuration of SS-MCM. This means, that the Served User receives an actual list of all different Message Types (i.e. the kind of messages) from the MC, which can be presented to the Served User together with an indication whether the Served User gets the complete information or only the compressed information about the stored messages of the specific Message Type(s).

All described changes of the default configuration shall be initiated from the Served User (and confirmed with an appropriate indication by the MC) by using an already existing connection or by setting up a new call independent connection. Release of the call independent connection is the responsibility of the Served User.

6.2.2.2 Invocation and operation

SS-MCM enables a MC to send status information to a Served User about messages stored in the Mailbox of the Served User.

All information shall be delivered between the MC and the Served User by using an already existing connection or by setting up a new call independent connection. Release of the call independent connection is the responsibility of its initiator.

The sections below describe this behavior in detail.

6.2.2.2.1 Incoming New Message

Upon receipt of a new message in the Mailbox, the MC shall send an indication through the PISN towards the Served User with the following information:

- the address of the Served User;
- the Message Type of the specific New Message;
- optionally, the address of the Message Centre.

In addition to that, and depending on the presentation style that was selected in the configuration for New Messages of that specific Message Type (i.e. compressed or complete information), the following information shall be delivered through the PISN towards the Served User by the MC:

a) Compressed Mode:

- the number of New Messages waiting for that specific Message Type;
- optionally, the priority of the latest highest priority message waiting for that specific Message Type;
- optionally, the address of the user that left the latest highest priority message;
- optionally, the time when the latest highest priority message was left.

b) Complete Mode:

- optionally, the number of New Messages waiting for that specific Message Type;
- the address of the user that left the last incoming message;
- optionally, the priority of the last incoming message;
- optionally, the time of the last incoming message.

NOTE 1 This structure is the same as the corresponding information specified in SS-MWI.

If the Complete Mode was selected for a specific Message Type each arrival of a New Message shall be reported to the Served User. If the Compressed Mode was selected the new message arrival shall be reported by the MC using one of the following methods:

- each new message is reported individually;
- more than one message is reported by using a single indication.

The support of compressed information is mandatory, whereas the support of complete information is optional. Storing of the delivered information at the Served User is optional. In the case that the originator address is NOT a PISN number (e.g. Message Type is "email"), only the compressed mode shall be used.

Each receipt of New Message information from the MC shall be confirmed with an appropriate indication. In addition, a Message Waiting Signal shall be set (if applicable) for that specific Message Type at the Served User's terminal.

If there are no more New Messages of a specific Message Type available in the mailbox (i.e. the Served User has retrieved all messages of a specific Message Type), the MC shall send an indication through the PISN towards the Served User. This indication shall contain the following information:

- the address of the Served User;
- the Message Type(s) for which New Message(s) are no longer available;
- optionally, the address of the Message Centre.

NOTE 2 This structure is the same as the corresponding information specified in SS-MWI.

This indication shall be confirmed and the Message Waiting Signal at the Served User's terminal, if any, shall be cancelled for that specific Message Type(s).

6.2.2.2.2 Update of Message Centre Information

Whenever the number of new and/or retrieved messages in a Mailbox changes, excluding the arrival of a New Message (e.g. the Served User has retrieved one or more of the new messages or has deleted one or more messages), the Message Centre shall inform the Served User by sending an updated list of all new and/or retrieved messages (i.e. update procedure). The update information shall include

- the address of the Message Centre; <http://www.iso.org/iso/catalog/standards/sist/15f76cf2-f046-4c00-8bec-3aee27718511/iso-iec-20116-2004>
- the address of the Served User;
- the Message Type of the messages for that specific update procedure;
- either Complete Information about New and/or Retrieved Messages;
- or Compressed Information about New and/or Retrieved Messages;
- or a mixture of both, e.g. Complete Information for New Messages and Compressed Information for Retrieved Messages as defined in the actual configuration of SS-MCM.

NOTE 1 The procedures for how the Served User retrieves the content of messages and how the Served User can delete messages in the Mailbox is out of the scope of this International Standard.

The update procedure shall be based on the Message Type. The information for the next Message Type shall only be transmitted after the update information for all new and/or retrieved messages of one specific Message Type has been completely transmitted to the Served User. Each update procedure shall be confirmed with an appropriate indication.

NOTE 2 The default style (Compressed or Complete Information), which is used for the update procedure of the various Message Type(s), is implementation dependent and will be pre-defined by the service provider.

At the end of the update procedure the Message Waiting Signal at the Served User's terminal, if available, shall be refreshed for the various Message Types.

6.2.2.2.3 Update request from the Served User

At any time the Served User can request the Message Centre to send update information for either all available message types or only for one specific Message Type. To request an update for a Mailbox at the MC the following information from the Served User shall be sent towards the MC:

- address of the Served User (i.e. Party Number);
- the Message Type(s) for which the Served User requests an update;
- optionally, the address of the Message Centre (e.g. Party Number).

After this request the Message Centre shall answer the Served User request with information about the status of the New Messages in the Served User's Mailbox of the requested Message Type(s). Depending on the presentation style (i.e. compressed or complete information), which is adopted in the current configuration for the New Messages, the MC shall provide the Served User with the following information:

a) Compressed Mode:

- Message Type for which the Served User has requested an update;
- optionally, the address of the Message Centre;
- optionally, the number of New Messages waiting for that specific Message Type;
- optionally, the priority of the latest highest priority New Message waiting for that specific Message Type;
- optionally, the address of the user that left the latest highest priority New Message;
- optionally, the time when the latest highest priority New Message was left.

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b) Complete Mode:

- Message Type for which the Served User has requested an update;
- optionally, the number of New Messages waiting for that specific Message Type.

NOTE This structure is the same as the corresponding information specified in SS-MWI. After sending this information the MC shall start the update procedure as described in 6.2.2.2.2.

6.2.2.2.4 Mailbox – full indication

Whenever the Served User's Mailbox reaches its storing capacity (or a specific threshold value) for one or more Message Types, the MC may send a Mailbox-full indication for specific Message Types towards the Served User. The Mailbox-full indication shall be sent independently of all other monitoring procedures.

6.2.3 Exceptional procedures

6.2.3.1 Activation, deactivation and interrogation

The Served User shall get an appropriate error indication if

- the Served User wants to communicate with the MC but has no access from the service provider;
- a specific Message Type is requested by the Served User but not provided by the MC;

- a specific presentation style (i.e. compressed and/or complete information) for messages of a specific Message Type requested from the Served User is not provided by the MC.

6.2.3.2 Invocation and operation

The Served User shall get an appropriate error indication if

- the Served User wants to communicate with the MC but has no access from the service provider;
- a specific Message Type is requested by the Served User but not provided by the MC;
- a specific presentation style (i.e. compressed and/or complete information) for messages of a specific Message Type requested from the Served User is not provided by the MC.

6.3 Interactions with other Supplementary Services / Additional Network Features

Interactions with other supplementary services and ANFs for which PISN standards were available at the time of publication of this International Standard are specified below.

6.3.1 Calling Line Identification Presentation (SS-CLIP)

No interaction.

6.3.2 Connected Line Identification Presentation (SS-COLP)

No interaction.

6.3.3 Calling/Connected Line Identification Restriction (SS-CLIR)

No interaction.

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6.3.4 Calling Name Identification Presentation (SS-CNIP)

No interaction.

6.3.5 Calling/Connected Name Identification Restriction (SS-CNIR)

No interaction.

6.3.6 Connected Name Identification Presentation (SS-CONP)

No interaction.

6.3.7 Call Forwarding Unconditional (SS-CFU)

No interaction.

6.3.8 Call Forwarding Busy (SS-CFB)

No interaction.

6.3.9 Call Forwarding No Reply (SS-CFNR)

No interaction.