



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**D.232**

(05/97)

SERIES D: GENERAL TARIFF PRINCIPLES

General tariff principles – Charging and accounting principles for international telecommunication services provided over the ISDN

---

**Specific tariff and accounting principles  
applicable to ISDN supplementary services**

ITU-T Recommendation D.232

(Previously CCITT Recommendation)

---

## ITU-T D-SERIES RECOMMENDATIONS

### GENERAL TARIFF PRINCIPLES

TERMS AND DEFINITIONS	D.0
GENERAL TARIFF PRINCIPLES	D.1–D.299
Private leased telecommunication facilities	D.1–D.9
Tariff principles applying to data communication services over dedicated public data networks	D.10–D.39
Charging and accounting in the international public telegram service	D.40–D.44
Charging and accounting in the international telemessage service	D.45–D.49
Charging and accounting in the international telex service	D.60–D.69
Charging and accounting in the international facsimile service	D.70–D.75
Charging and accounting in the international videotex service	D.76–D.79
Charging and accounting in the international phototelegraph service	D.80–D.89
Charging and accounting in the mobile services	D.90–D.99
Charging and accounting in the international telephone service	D.100–D.159
Drawing up and exchange of international telephone and telex accounts	D.160–D.179
International sound- and television-programme transmissions	D.180–D.184
Charging and accounting for international satellite services	D.185–D.189
Transmission of monthly international accounting information	D.190–D.191
Service and privilege telecommunications	D.192–D.195
Settlement of international telecommunication balances of accounts	D.196–D.209
<b>Charging and accounting principles for international telecommunication services provided over the ISDN</b>	<b>D.210–D.279</b>
Charging and accounting principles for universal personal telecommunication	D.280–D.284
Charging and accounting principles for intelligent network supported services	D.285–D.299
RECOMMENDATIONS FOR REGIONAL APPLICATION	D.300–D.699
Recommendations applicable in Europe and the Mediterranean Basin	D.300–D.399
Recommendations applicable in Latin America	D.400–D.499
Recommendations applicable in Asia and Oceania	D.500–D.599
Recommendations applicable to the African Region	D.600–D.699

*For further details, please refer to ITU-T List of Recommendations.*

## **ITU-T RECOMMENDATION D.232**

### **SPECIFIC TARIFF AND ACCOUNTING PRINCIPLES APPLICABLE TO ISDN SUPPLEMENTARY SERVICES**

#### **Source**

ITU-T Recommendation D.232 was revised by ITU-T Study Group 3 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 30th of May 1997.

## FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

## NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

## INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had/had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 1997

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

# CONTENTS

	<i>Page</i>
1 Introduction .....	1
2 Charging aspects .....	1
2.1 Number identification .....	1
2.2 Direct-Dialling-In and Multiple Subscriber Number and Sub-addressing services.....	1
2.3 Call Forwarding, Call Transfer and Call Deflection services .....	2
2.4 Line Hunting .....	2
2.5 Call Waiting and Call Hold .....	2
2.6 Conference Calling .....	3
2.7 Closed User Group, Private Numbering Plan .....	3
2.8 Advice of Charge .....	4
2.9 Priority service.....	4
2.10 Multi-Level Precedence and Preemption service.....	5
2.11 Outgoing Call Barring .....	5
2.12 In-call Modification .....	5
2.13 Call completion service .....	6
3 Accounting .....	6
4 Charging mechanisms and support requirements.....	6
Annex A – Summary of charging mechanisms and support requirements for supplementary services .....	7
Annex B – Alphabetical list of abbreviations used in this Recommendation.....	8



## **SPECIFIC TARIFF AND ACCOUNTING PRINCIPLES APPLICABLE TO ISDN SUPPLEMENTARY SERVICES**

*(revised in 1992, 1994 and in 1997)*

### **1 Introduction**

General charging and accounting principles for ISDN supplementary services may be found in Recommendation D.230. This Recommendation indicates the application of the general principles to each ISDN supplementary service. The supplementary services are placed in logical groupings where they share similar considerations and charging principles. Annex A summarizes the charging mechanisms and support requirements.

### **2 Charging aspects**

Malicious Call Identification.

#### **2.1 Number identification**

This subclause provides charging principles for the supplementary services, Calling Line Identification Presentation (CLIP), Calling Line Identification Restriction (CLIR), Connected Line Identification Presentation (COLP), Connected Line Identification Restriction (COLR) and Malicious Call Identification (MCID). Detailed descriptions of the services are provided in Recommendations I.251.3 (CLIP), I.251.4 (CLIR), I.251.5 (COLP), I.251.6 (COLR) and I.251.7 (MCID).

##### **2.1.1 Charging principles**

Innovation of the display or restriction service may be charged for by:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge; or
- c) a per event charge; or
- d) combinations of a) to c).

#### **2.2 Direct-Dialling-In and Multiple Subscriber Number and Sub-addressing services**

This subclause provides charging principles for the supplementary services, Direct-Dialling-In (DDI), Multiple Subscriber Number (MSN) and Sub-addressing (SUB). Detailed descriptions of the services are provided in Recommendations I.251.1 (DDI), I.251.2 (MSN) and I.251.8 (SUB).

##### **2.2.1 Charging principles**

The services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge.

Those charges would normally be proportional to the quantity of the numbers assigned.

**2.2.1.1** In the event that the service requested by the customer cannot be provided due to limitations in the network connection, but the customer elects to proceed with the call, the charges should be determined on the basis of the capability that was provided in order to complete the call.

In the event that the services requested by the customer cannot be provided due to limitations in the terminal function, the charges should be determined on the basis of the network resources provided.

### **2.3 Call Forwarding, Call Transfer and Call Deflection services**

This subclause provides charging principles for the supplementary services, Call Transfer (CT), Call Forwarding Busy (CFB), Call Forwarding No Reply (CFNR), Call Forwarding Unconditional (CFU) and Call Deflection services (CD). Detailed descriptions of the services are provided in Recommendations I.252.1 (CT), I.252.2 (CFB), I.252.3 (CFNR), I.252.4 (CFU) and I.252.5 (CD).

#### **Considering that**

- a) Call Transfer, Call Forwarding and Call Deflection services are functionally equivalent;
- b) the supplementary services identified above allow the diversion of Active (Call Transfer), or incoming (Call Forwarding) or specific (Call Deflection Service) calls to a third party;
- c) the mechanisms are invoked only at the served user's location and do not require additional originating or international network resources for invocation,

it is recommended that the charging principles in 2.3.1 be applied.

#### **2.3.1 Charging principles**

The services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge; and
- c) a usage charge based upon the number of successful invocations.

The served user is also responsible for the basic charges raised against the transferred (re-used connection method only) or forwarded call.

### **2.4 Line Hunting**

This subclause provides charging principles for the Line Hunting supplementary service. Detailed descriptions of the service is provided in Recommendation I.252.6.

#### **Considering that**

- a) the call establishment procedures are fundamentally unaltered;
- b) the supplementary service identified above merely allows the sequential or uniform establishment of calls to users connected to a group of ISDN interfaces;
- c) the mechanisms are invoked only at the called user's location and do not require additional originating or international network resources for invocation,

it is recommended that the charging principles in 2.4.1 be applied.

#### **2.4.1 Charging principles**

The service may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge.

Those charges would normally be proportional to the quantity of the interfaces in the group.

### **2.5 Call Waiting and Call Hold**

This subclause provides charging principles for the supplementary services, Call Waiting (CW) and Call Hold (HOLD). Detailed descriptions of the services are provided in Recommendation I.253.1 (CW) and in Recommendation I.253.2 (HOLD).



### **Considering that**

- a) the call establishment procedures are fundamentally unaltered;
- b) the supplementary services identified above merely allow the notification of incoming calls (CW) or the interruption of an existing communication (HOLD);
- c) the mechanisms are invoked only at the served user's location and do not require additional originating, terminating or international network resources for invocation,

it is recommended that the charging principles in 2.5.1 be applied.

#### **2.5.1 Charging principles**

The services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge.

Charging for the associated bearer service shall continue during the period that bearer service is placed on hold.

## **2.6 Conference Calling**

This subclause provides charging principles for the supplementary services, Conference Calling (CONF) and Three-Party Service (3PTY). Detailed descriptions of the services are provided in Recommendations I.254.1 (CONF) and I.254.2 (3PTY), I.254.4 Booked Add-on Conference (BAC).

### **Considering that**

- a) the basic call components (Bearers and Teleservices) are dealt with under their respective Recommendations;
- b) the supplementary services identified above employ the use of bridging equipment to allow communication between the served user and multiple parties; however the served user in Three-Party Service is not allowed to combine multi-party calls into a three-way conversation;
- c) the mechanisms are invoked only at the served user's location and do not require additional originating or international network resources for invocation;
- d) the numbers may be stored by the network to facilitate the setting-up of frequently established conference calls;
- e) principles associated with "cascading bridges" are for further study,

it is recommended that charging principles in 2.6.1 be applied.

#### **2.6.1 Charging principles**

The services may be charged for:

- a) inclusion in the rental charges raised against customers; or
- b) on the demand basis of bridge usage, i.e. holding time per port; or
- c) by a bundled invocation charge (Three-Party Service only).

## **2.7 Closed User Group, Private Numbering Plan**

This subclause provides charging principles for the Closed User Group supplementary service and the Private Numbering Plan Service. A detailed description of the service is provided in Recommendations I.255.1 and I.255.2.

### **Considering that**

- a) the call establishment procedures are fundamentally unaltered;
- b) the Closed User Group service allows the access or restriction to a specified list of numbers or optionally to the public network;

- c) the Private Numbering Plan service allows members of Virtual members of the plan to establish communications within the plan community using a unique numbering plan which is translated to a public numbering plan by the network;
- d) the mechanisms are invoked only at the served user's location and do not require additional originating, terminating network resources for invocation beyond the checking of the appropriate level of access (for CUG), and number translation (PNP),

it is recommended that the charging principles in 2.7.1 be applied.

### **2.7.1 Charging principles**

The services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge.

Those charges may be proportional to the access or restriction options subscribed to.

## **2.8 Advice of Charge**

This subclause provides charging principles for the Advice of Charge (AOC) supplementary service. A detailed description of the service is provided in Recommendation I.256.2.

### **Considering that**

- a) the basic call establishment procedures are fundamentally unaltered;
- b) the supplementary service identified above merely allows the customer to be notified of the price of the current call;
- c) the mechanisms are invoked only at the served user's location and do not require additional originating, terminating or international network resources for invocation,

and recognizing that not all services and charging processes can accommodate this service, it is recommended that the charging principles in 2.8.1 be applied.

### **2.8.1 Charging principles**

The services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge; and/or
- c) a per successful invocation charge which may vary according to the stage in the call at which the invocation occurs.

## **2.9 Priority service**

This subclause provides charging and accounting principles for the Priority supplementary service (A- and B-priorities). Detailed description of the service is provided in Recommendation I.255.4 (A-priority, B-priority).

### **Considering that**

- a) the call establishment procedures will have to be modified in order to set up the proper level of priority;
- b) the originating, transit (if applicable) and terminating exchanges will need to process the priority information;
- c) the mechanisms will be invoked at the calling user's location for both the A-priority and B-priority,

it is recommended that the charging principles in 2.9.1 be applied.

### **2.9.1 Charging principle**

The service may be charged for by either:

- a) the setting of a separate subscription charge; and/or
- b) a uniform charge per call or a variable charge per call based on the level of priority required.

## **2.10 Multi-Level Precedence and Preemption service**

This subclause provides for charging and accounting principles for the Multi-Level Precedence and Preemption (MLPP) Service. Detailed descriptions of the service are provided in Recommendation I.255.3 (MLPP).

### **Considering that**

- a) the Multi-Level Precedence and Preemption can be considered as a special form of priority service;
- b) the originating, transit (if applicable) and terminating exchanges will need to process the priority information,

it is recommended that the charging principles in 2.10.1 be applied.

### **2.10.1 Charging principles**

The service may be charged for by either:

- a) a subscription charge for the setting-up of the call; and/or
- b) a uniform charge per call or a variable charge per call based on the level of precedence required; and/or
- c) a uniform charge per call or a variable charge per call based on the number of alternate party(ies) requested (for further study).

## **2.11 Outgoing Call Barring**

This subclause provides the charging principles for the supplementary service Outgoing Call Barring. The detailed service description is provided in Recommendation I.255.5.

### **Considering that**

- a) the called numbers are checked against the parameters set by the service provider according to the customer's requirements;
- b) the service identified above merely blocks the Outgoing calling to all numbers or those of a selected restriction;
- c) the mechanisms are invoked only at the served user's location and do not require additional originating or international network resources for invocation,

it is recommended that the principles in 2.11.1 be applied.

### **2.11.1 Charging principles**

Invocation of the Outgoing Call Barring service be charged by:

- a) inclusion in the rental charges raised against the customer; or
- b) the setting of a separate subscription charge; and
- c) a per event charge where the ability to switch the barring on or off is provided.

## **2.12 In-call Modification**

The In-call Modification (IM) supplementary service enables a user to change within an established call from one type of call to another type of call without changing the end-to-end connection from a user access point of view.

### **Considering that**

- a) the normal call charges are based on the bearers or teleservices used in the two call types;
- b) In-call Modification is only relevant for charging purposes when network capabilities are required to make the modification requested;
- c) the only charge relevant to the IM service itself is to cover the costs relating to the invocation of the call type change,

it is recommended that the charging principles in 2.12.1 be applied.

### **2.12.1 Charging principles**

The In-call Modification may be charged for by:

- a) inclusion in the rental charges raised against customers; or
- b) the setting-up of a separate subscription charge; or
- c) a per event charge; or
- d) combinations of a) to c).

### **2.13 Call completion service**

This subclause provides charging principles for call completion services. The service descriptions are contained in Recommendation I.253.3 and I.253.4.

#### **Considering that**

- a) the supplementary services identified above allow the calling party upon encountering a busy condition for the called party to invoke the CCBS service, whereupon the network then provides an indication when the called party terminal returns to an idle condition;
- b) while mechanisms for this supplementary service are invoked in both networks, accounting may not be necessary, since the destination network is recompensed for its mechanisms through the accounting for the additional calls completed,

it is recommended that the charging principles in 2.13.1 be applied.

#### **2.13.1 Charging principles**

Invocation of the services may be charged for by either:

- a) inclusion in the rental charges raised against customers; or
- b) the setting of a separate subscription charge; and
- c) a per event charge; or
- d) a combination of a) to c).

## **3 Accounting**

**3.1** Except for Priority service and MLPP, no additional originating or international network resources are required to provide the supplementary services in this Recommendation and accordingly, no additional accounting should be required. In the case of Priority service and MLPP, since there might be additional network resources used to complete an international call using this supplementary service, a surcharge per call might be appropriate.

**3.2** Should the services be provided in an interworking environment, additional resources may be required and accounting arrangements may be necessary (further study).

## **4 Charging mechanisms and support requirements**

**4.1** The charging elements in Annex A have been identified as being in need of network support mechanisms.

**4.2** Administrations may elect to use all, none or any combination of the charging elements identified.

**4.3** The charging elements and mechanisms are explained in Recommendation D.260.

## Annex A

### Summary of charging mechanisms and support requirements for supplementary services

Supplementary service	Element	Form	Unit	Modifier
CLIP, CLIR	Access Invocation	Subscription Set-up	UPC UPI	None None
MCID <sup>a)</sup>	Access Invocation	Subscription Set-up	UPC UPI	None None
DDI, MSN	Access	Subscription	UPC	Quantity of numbers assigned
SUB	Access Invocation	Subscription Per call containing sub-address	UPC UPI	None None
Call Transfer, Call Forwarding Call Deflection	Access Invocation	Subscription Set-up	UPC UPI	None None
Line Hunting	Access	Subscription	UPC	Quantity of interfaces
Call Waiting, Call Hold	Access	Subscription	UPC	None
Conference calling, Three-Party Service <sup>b)</sup>	Access Invocation  Usage	Subscription Set-up  Call duration/ number of ports	UPC Uniform charge per event  Holding time per port	Modifier None
Closed User Group, Private Numbering Plan	Access  (Manager or each party)	Subscription per member Subscription	UPC	Services required
Advice of Charge	Access Invocation	Subscription Per request	UPC UCI	None Stage at which invoked
Call completion services	Access Invocation	Subscription Set-up	UPC UCI	None None
Priority	Access Invocation	Subscription Call set-up	Uniform periodic charge  Uniform or variable charge per successful invocation	Priority level
MLPP	Access Invocation	Subscription Call set-up	Uniform periodic charge  Uniform or variable charge per successful invocation and/or per alternate party(ies) requested	Level of precedence
Outgoing Call Barring	Access Invocation	Subscription Call set-up	UPC UPI	None None
<p><sup>a)</sup> Administrations may elect to provide MCID without charge to the subscriber.</p> <p><sup>b)</sup> Assumes bridge in country of origin.</p> <p>NOTE – The subscription is included in normal rental or additional rental.</p>				

**Summary of accounting requirements for supplementary services**  
(for further study)

<b>Supplementary service</b>	<b>Element</b>	<b>Form</b>	<b>Unit</b>
Priority, MLPP	Invocation	Surcharge	Uniform per call amount

**Annex B**

**Alphabetical list of abbreviations used in this Recommendation**

3PTY	Three-Party Service
AOC	Advice of Charge
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONF	Conference Calling
CT	Call Transfer
CW	Call Waiting
DDI	Direct-Dialling-In
HOLD	Call Hold
MLPP	Multi-Level Precedence and Preemption
MSN	Multiple Subscriber Number
UCI	Uniform Charge for (successful) Invocation
UPC	Uniform Periodic Charge (rental)

## ITU-T RECOMMENDATIONS SERIES

- Series A Organization of the work of the ITU-T
- Series B Means of expression: definitions, symbols, classification
- Series C General telecommunication statistics
- Series D General tariff principles**
- Series E Overall network operation, telephone service, service operation and human factors
- Series F Non-telephone telecommunication services
- Series G Transmission systems and media, digital systems and networks
- Series H Audiovisual and multimedia systems
- Series I Integrated services digital network
- Series J Transmission of television, sound programme and other multimedia signals
- Series K Protection against interference
- Series L Construction, installation and protection of cables and other elements of outside plant
- Series M Maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
- Series N Maintenance: international sound programme and television transmission circuits
- Series O Specifications of measuring equipment
- Series P Telephone transmission quality, telephone installations, local line networks
- Series Q Switching and signalling
- Series R Telegraph transmission
- Series S Telegraph services terminal equipment
- Series T Terminals for telematic services
- Series U Telegraph switching
- Series V Data communication over the telephone network
- Series X Data networks and open system communication
- Series Z Programming languages