



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

D.225

(12/97)

SERIES D: GENERAL TARIFF PRINCIPLES

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

Charging and accounting principles to be applied to frame relay data transmission service

ITU-T Recommendation D.225

(Previously CCITT Recommendation)

ITU-T D-SERIES RECOMMENDATIONS
GENERAL TARIFF PRINCIPLES

TERMS AND DEFINITIONS	D.0
GENERAL TARIFF PRINCIPLES	
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 telemesssage 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
Charging and accounting principles for international telecommunication services provided over the ISDN	D.210–D.279
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	
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.225

CHARGING AND ACCOUNTING PRINCIPLES TO BE APPLIED TO FRAME RELAY DATA TRANSMISSION SERVICE

Source

ITU-T Recommendation D.225 was revised by ITU-T Study Group 3 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 11th of December 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.

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As of the date of approval of this Recommendation, the ITU 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.

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CONTENTS

	<i>Page</i>
1 General	1
2 Charging	1
2.1 Network access charges	1
2.2 Network charges	1
2.2.1 Dedicated circuits (permanent virtual circuits)	1
2.2.2 Switched virtual circuit option	2
3 Accounting	2
3.1 Network access	2
3.2 Dedicated circuits (permanent virtual circuits)	2
3.2.1 Flat rate option	2
3.2.2 Switched virtual circuit	2
4 Other options	3

Introduction

This Recommendation sets out the general principles for charging and accounting for the provision of Frame Relay Data Transmission Service (FRDTS) via dedicated circuits (permanent virtual circuits) and by Switched Virtual Circuits. These services are defined in Recommendation X.36. The frame relaying bearer service in the ISDN (including frame relaying multicast service) is described in Recommendation I.233.1.

CHARGING AND ACCOUNTING PRINCIPLES TO BE APPLIED TO FRAME RELAY DATA TRANSMISSION SERVICE

(revised in 1997)

1 General

FRDTS provides bi-directional transfer of data frames between Data Terminal Equipment/Data Circuit Equipment (DTE/DCE) interfaces with content transparency, error detection, and preservation of the order of transmitted frames. FRDTS does not provide procedures for error notification, error recovery, nor re-transmission of lost frames. These are functions of the DTE.

Data is transferred at a Committed Information Rate (CIR) which the network is committed to transfer under normal conditions. The CIR is selected from a set supported by the network for an agreed period of time. In addition, customers may send data at times at selected rates above the CIR, which the network will endeavor to deliver, but with the possibility of a lower probability of delivery.

Loss of frames can result not only from transmission errors but also from congestion within the network. The FRDTS notifies the sending DTE when there is network congestion or failure, so that the DTE may take appropriate action to reduce or stop the transmission of frames.

In addition to the Recommendations mentioned in the Introduction, information on the FRDTS may also be found in Recommendations I.370 and Q.933.

2 Charging

2.1 Network access charges

Network access charges are a national matter; however, the network charging options provided in the following subclause may also be applied to network access.

2.2 Network charges

The following charging options may be applied to the FRDTS. In addition, a non-recurring charge may be applied for the initial establishment of the service.

2.2.1 Dedicated circuits (permanent virtual circuits)

2.2.1.1 Flat rate option

Since this option treats the permanent virtual circuit in a manner similar to a leased circuit, (i.e. independent of usage), the charges would be established consistent with other non-usage sensitive permanent virtual circuit applications, and would relate to the capabilities of the facilities provided (reserved), and the charging interval (i.e. the period that the facilities are reserved, for example, on a monthly basis). Administrations would each charge their customers for the portion of the permanent virtual circuit which they provide.

2.2.1.2 Reservation and usage option

Under this option, charges are applied to both the reservation of network capabilities (as in the flat rate option) and the traffic usage. The traffic usage component would be based upon a specified charging unit (see 2.2.1.4). It may be appropriate to establish a different charge (than that applied to units transferred below the CIR, if applicable) for charging units which are transferred above the committed information rate.

2.2.1.3 Usage option

Under this option, charges are only applied to traffic usage, using the specified charging unit (see 2.2.1.4), without charging for the reservation of network capabilities. It may be appropriate to establish a different charge (than that applied to units transferred below the CIR) for charging units which are transferred above the committed information rate.

2.2.1.4 Usage charging unit

Due to the variable sizes of frames, charging for frames transmitted to the network may not be appropriate for international application. Usage charging units of thousands or millions of octets are therefore recommended for international applications (for further study).

2.2.2 Switched virtual circuit option

Under this option, calls are set up in a manner similar to circuit switched data communications with the customer and Frame Relay network establishing the CIR at call set-up.

2.2.2.1 Charges should be based upon call duration and the established CIR.

3 Accounting

The following accounting options are applicable to the FRDTS:

3.1 Network access

Accounting is not applicable for network access since this is a national matter.

3.2 Dedicated circuits (permanent virtual circuits)

3.2.1 Flat rate option

Since Administrations charge their customers for the portion of the permanent virtual circuit that they provide, no international accounting is required under this option.

3.2.1.1 Reservation and usage option

This option has two components: reservation and traffic usage. Since each involved Administration charges their customer for the reservation of the portion of the permanent virtual circuit that they provide, no international accounting is required for this component. For the traffic usage component, Administrations should agree as to the usage accounting unit (see 3.2.1.3) to be used, and the accounting rate to be applied for the carriage of usage accounting units. In addition, Administrations may agree to apply a different accounting rate (other than that applied to units transferred below the CIR) for usage accounting units which are transferred above the committed information rate.

3.2.1.2 Usage option

Administrations should agree as to the usage accounting unit to be used, and the accounting rate to be applied for their carriage. In addition, Administrations may agree to apply a different accounting rate (other than that applied to units transferred below the CIR) to usage accounting units which are transferred at a rate above the committed information rate.

3.2.1.3 Usage accounting unit

Ideally, the usage accounting unit would be the same as the usage charging unit, although Administrations may agree to a different usage accounting unit, where appropriate.

3.2.2 Switched virtual circuit

Under this option, calls are set up in a manner similar to circuit switched data communications with the customer and Frame Relay network establishing the CIR at call set-up.

3.2.2.1 Accounting for this option should be based upon call duration and on the established CIR.

4 Other options

Charging and accounting options for other service applications in the FRDTS are for further study.

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	TMN and network 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 communications
Series Y	Global information infrastructure
Series Z	Programming languages