INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

D.150

(06/99)

SERIES D: GENERAL TARIFF PRINCIPLES

General tariff principles – Charging and accounting in the international telephone service

---

New system for accounting in international telephony

ITU-T Recommendation D.150

(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 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
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.150

NEW SYSTEM FOR ACCOUNTING IN INTERNATIONAL TELEPHONY

Summary

This Recommendation sets out various procedures for remuneration destination and transit Administrations for international telephone communications.

The addition of three new remuneration procedures adapted to the new market condition is proposed. These are: the settlement rate procedure, the termination charge procedure and a third procedure, called special arrangements.

Source

ITU-T Recommendation D.150 was revised by ITU-T Study Group 3 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 11th of June 1999.

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 term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration, ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

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 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.

CONTENTS

Page

Recommendation D.150

NEW SYSTEM FOR ACCOUNTING IN INTERNATIONAL TELEPHONY

(Mar del Plata, 1968; amended at Melbourne, 1988; revised in 1992, 1996 and 1999)

1 General considerations

1.1 Introduction

1.1.1 The introduction of automatic and semi-automatic operation entails the use of alternative and overflow routings which make it impracticable to follow the path of a telephone call without considerable technical complications.

1.1.2 In order to avoid complicating too much the new technical equipment required and thereby raising its cost, new procedures are required so as to eliminate the need to know the path of every call as the basis for accounting in international telephony.

1.1.3 There is also the situation in certain international relations whereby Administrations purchase or lease direct transit circuits for the handling of their traffic.

1.1.4 The following procedures to meet these new situations and improve the efficiency of the world telephone network are valid, above all, for semi-automatic and automatic operation. They can be applied on relations operated manually, subject to agreement between the Administrations of all the countries concerned.

1.1.5 These procedures introduce the new concept of remunerating the Administrations of countries of destination and transit for making telephone network facilities available for use (e.g. for the routing of telephone calls including those with special facilities and calls indistinguishable from telephone calls such as facsimile transmission, etc.) by Administrations of countries of origin.

1.2 Explanation of some of the terms and expressions used in this Recommendation

1.2.1 Except for the expression "conversation time" which is defined in 1.2.2 below, an explanation of some of the terms or of some of the expressions used in this Recommendation is given in Recommendation D.000.

1.2.2 conversation time

F: durée de conversation

S: duración de conferencia

A minute of conversation time is the traffic unit that is recommended for use in the traffic unit price procedure. Conversation time is the interval that elapses between:

– the moment when the reply condition (answer signal in the backward direction) is detected at the point where the recording of the call duration takes place; and

– the moment when the clear forward condition (clear forward signal) is detected at the same point.

1.3 Basic principles of a new system for accounting in international telephony

1.3.1 The remuneration of the Administrations of *transit countries* (direct transit or switched transit) should not depend upon the procedure selected by the terminal Administrations for accounting for their remuneration. That is, the different procedures affect only the remuneration of terminal Administrations.

1.3.2 As regards the remuneration of the Administrations of the countries of destination and transit countries, it is preferable to make no distinction between automatic and semi-automatic traffic when establishing international accounts. This is in line with the idea that Administrations should be remunerated on the basis of the facilities made available. Whilst expenses of setting up calls in these two cases are different in countries of origin, they are approximately the same in the countries of destination and transit countries.

1.3.3 It is preferable, in order to simplify accounting, that one procedure or the other be used to the greatest possible extent. Certain regions may find it expedient to select one of the procedures for use within their region.

1.4 Procedures

Procedures relating to remuneration of Administrations of *destination and transit countries* are as follows:

1.4.1 Remuneration of countries of destination

Administrations of countries of destination will be remunerated,

either by:

1.4.1.1 a procedure whereby the Administration of the country of origin keeps its revenue and remunerates the Administration of the country of destination for the facilities made available, including the international circuit, the international exchange and the national extension[1]:

a) on the basis of a flat-rate price per circuit (called the *flat-rate price procedure*); or

b) on the basis of traffic units carried (called the *traffic-unit price procedure*);

in either case, the price will be fixed by the Administration of the country of destination;

or by:

1.4.1.2 the procedure whereby accounting revenue is shared between terminal Administrations (called the *accounting revenue division procedure*).

1.4.2 Remuneration of transit countries

1.4.2.1 For direct transit operation between two terminal Administrations, the Administration of transit countries will be remunerated for facilities made available according to the flat-rate price procedure.

1.4.2.2 For switched transit operation between two terminal Administrations, the Administration of the first transit exchange will be remunerated for facilities made available according to the traffic-unit price procedure. Other transit Administrations involved will be remunerated by the Administration of the first transit exchange using the flat-rate price procedure for direct transit circuits or the traffic-unit price procedure for switched transit facilities.

---

[1] Having due regard, as concerns this element, to the location of the international exchange and the distribution of the international traffic within the country of destination.

1.4.3 Remuneration of the country of origin

For the remuneration of the country of origin, see clause 4.

1.5 Traffic unit

1.5.1 Definition of the traffic unit – Conversation time

It is recommended that, when the traffic-unit price procedure is used [see 1.4.1.1 b) and 1.4.2.2 above], the traffic unit adopted for the purpose of remunerating other Administrations should be *one minute of conversation time*.

1.5.1.1 With regard to a call, conversation time is the interval that elapses between:

– the moment when the reply condition (answer signal in the backward direction) is detected at the point where the recording of the call duration takes place; and

– the moment when the clear forward condition (clear forward signal) is detected at the same point.

1.5.1.2 The above duration conforms to that in Recommendations E.230 [1] and E.260 [2] for the "call duration" of automatic calls; it is now to be applied to all calls covered by this Recommendation. In practice, the reply condition is detected by recognition of the answer signal generated upon answer of the called party or distant operator. The clear forward condition is detected by recognition of the signal generated by the calling party or outgoing operator clearing down the connection. In default of such action, the connection will be automatically cleared down and a clear forward signal generated in the outgoing exchange after a delay period following receipt of the clear back signal generated by the called party replacing the receiver.

1.5.1.3 Conversation time has been chosen as the traffic unit because it is capable of being measured automatically in response to signals generated by ITU-T signalling systems. Furthermore, it allows accounts to be settled by an Administration of a transit country without waiting for information from countries "up the line" as regards call durations taken from data on operators' tickets.

1.5.1.4 The only other unit which meets these criteria, holding time, is not recommended because of the wide variations between chargeable time and holding time in different relations and in different call types, which makes the use of holding time inappropriate for remunerating Administrations of countries of destination.

1.5.2 Remarks

1.5.2.1 In relation to individual calls, conversation time:

a) will be less than circuit-holding time by reason, in particular, of the extra time circuits are held because there will be a period between the seizure of the circuit and the answer signal;

b) will be the same as chargeable time in the case of station-to-station calls in the fully automatic service and will be the same as charged in the same service when periodic pulse-metering systems are used;

c) may be more than chargeable time in the case of personal calls where time is spent in obtaining the called party, of calls with special facilities requiring operator intervention (such as credit card, collect, conference or data calls or phototelegraph transmissions); or in the case of station calls requiring operator assistance in the called country of destination or a transit country.

1.5.2.2 In relation to overall use of the circuit:

a) there will be additional holding time in case of inability to reach the distant subscriber;

b) there will be additional conversation time because of time on the circuit for service calls, directory inquiry or other information exchanges between operators;

c) exceptionally, conversation time could be less than charged time depending on the mixture of traffic on the circuit and whether the Administration of the country of origin rounds up the charged time to reflect the applied charging system (see Recommendation D.100), or when the final pulse in a periodic pulse-metering system does not coincide with the end of the conversation time.

1.5.2.3 It should further be noted that where conversation time is not known, but other time periods such as circuit-holding time or charged or chargeable time are known, e.g. from operators' tickets, it is possible to convert these other times to approximate conversation times by the use of factors which allow for the time differences referred to in 1.5.2.1 and 1.5.2.2 above. These factors can be established on the basis of periodic measurement or sampling procedures, and may need to take account of individual characteristics.

2 Remuneration of the Administration of the country of destination

In establishing the following procedures, Administrations should apply the principles of:

– transparency;

– non-discrimination; and

– cost-orientation,

as well as other principles contained in Recommendation D.140 as applicable.

2.1 Flat-rate price procedure

2.1.1 Under this procedure, the Administration of the country of destination receives payment for the facilities made available by a flat-rate price fixed by it as a price per circuit. The price per circuit would cover:

a) the international circuit section provided by the country of destination;

b) the use of its international exchange;

c) the national extension[1].

2.1.2 In establishing these flat-rate prices, Administrations should take into account the principles in Recommendation D.140. Administrations of countries within the same region may find it desirable to follow the principles in ITU-T regional Recommendations.

2.2 Traffic-unit price procedure

2.2.1 Under this procedure, the country of destination receives payment on the basis of the price fixed by it per traffic unit. This price will be related to the facilities made available and will take account of:

a) the international circuit section provided by the country of destination;

b) the use of its international exchange;

c) the national extension[1].

2.2.2 In establishing these traffic-unit prices, Administrations should take into account the principles contained in Recommendation D.140. Administrations of countries within a region may find it desirable to follow the principles in ITU-T regional Recommendations.

2.3 Accounting revenue division procedure

2.3.1 Under this procedure, the accounting revenue from the traffic exchanged in their relationship is divided between the Administrations of the terminal countries, in principle on a 50/50 basis. A sharing basis of other than 50/50 may be agreed if both Administrations agree:

– that cost-orientated accounting rates have been achieved; and

– that the costs incurred by each Administration for the provision of international telephone service are not essentially equivalent.

2.3.2 The Administration of each terminal country in principle pays an appropriate share (normally half) of any remuneration due to the Administrations of transit countries.

2.3.3 In establishing the accounting rates under this procedure, Administrations should take into account the principles contained in Recommendations D.140 and D.155.

2.4 Settlement rate procedure

2.4.1 Under this procedure, the Administrations of origin and destination will bilaterally agree to a cost-orientated settlement rate in accordance with Recommendation D.140.

2.4.2 The rate may differ in each direction and may also differ according to the domestic delivery network on which the traffic terminates.

2.5 Termination charge procedure

2.5.1 Under this procedure, the Administrations of destination receive a payment on the basis of a cost-orientated termination charge which they set by reference to a mutually acceptable costing methodology or, when available, a costing formula/methodology contained in ITU-T Recommendations, for traffic received from Administrations with which the application of this procedure has been bilaterally agreed.

2.5.2 The termination[2] charge should comprise:

a) the use of its international exchange.

b) the national extension.

Components a) and b) should normally be separately identified.

In addition,

c) Where it is bilaterally agreed to use an international circuit provided by the Administration of destination, to terminate an international call, then the costs associated with the use of that international circuit section should be added to the call termination charge.

   This charge should be cost orientated, separately identified and bilaterally negotiated. Where the administration of origin does not use the international circuit section offered by the Administration of destination, no charge would be applied.

d) Any additional costs that are imposed on a carrier by national regulation and that are a condition of operating its domestic network and providing termination of international traffic.

The Administration should make available to its international correspondents concerned a detailed list of any additional cost elements, as described in d) above, together with associated national laws and regulations.

---

[2] A schedule of charges may be needed to account for cost differences and commercial factors.

2.5.3 The same termination charge shall be applied to all traffic from any source arriving at the Administration in the country of destination, unless it can be demonstrated that there are significant differences in the costs. The level of charge, and the methodology for determining variations of the charge, shall be non-discriminatory, and shall be made available on a transparent basis to all Administrations.

2.5.4 Administrations should periodically review their termination charges and appropriately revise them to maintain at the cost-orientated levels consistent with the principles agreed for the termination charge procedure in 2.5.1 above.

2.6 Other procedures

For traffic between two countries with open and competition-orientated telecommunication markets, Administrations may elect to use other procedures where such procedures are more suited to the nature of their relationship. Where such traffic is terminated by a third Administration, the procedures should not affect the remuneration of that terminating Administration without that Administration's prior agreement.

2.7 Consideration regarding the choice of procedure

Administrations will bilaterally agree on the remuneration procedure that is most appropriate to their needs. In absence of agreement, the last agreed procedure will continue to apply.

2.8 Consideration regarding choice of accounting procedure

2.8.1 The accounting revenue division procedure is particularly appropriate when there is a significant volume of traffic exchange or when operation is over both-way circuits[3] as in the case of certain intercontinental traffic relations. The establishment of accounts for collect and credit card calls may be easier under the accounting revenue division procedure.

2.8.2 On the other hand, other accounting procedures are more appropriate when:

a) the volume of traffic exchanged between the Administrations of terminal countries is light, as is the case when all traffic is handled only by switched transit;

b) there is one-way operation on all the international circuits concerned[3].

2.9 Simplification of accounts and use of traffic sampling

2.9.1 In certain conditions, the Administrations of terminal countries may agree not to exchange international accounts when, for example:

a) the balance of settlement of their accounts is normally negligible;

b) the *terminal countries'* traffic levels in both directions are more or less equal;

c) there is approximate equivalence as regards their national extension[1].

---

[3] In connection with one-way and both-way circuit operations, actual circuit operation should not be confused with the possibilities of operating such circuits that signalling systems may offer. Even though the circuits between the terminal countries have a signalling system permitting both-way operation, it is common practice, when the volume of traffic is large enough, to split the both-way circuit groups into three groups, two of which are operated on a one-way basis, the third, operated on a both-way basis, being used for overflow from the first two.

2.9.2 Traffic sampling may be used for the establishment of international accounts when the countries involved in a given traffic relation so agree. This sampling may then avoid the necessity for continuous traffic measurements. For example, the samples could cover five working days and could be taken at regular intervals, such as once a year or four times a year, or they could be taken on the occasion of any significant change in the number of circuits in the given relation. Sampling is particularly useful when traffic in any international relationship is reasonably stable.

3 Remuneration of the Administrations of transit countries

3.1 Flat-rate price procedure

3.1.1 It is recommended that in the case of direct transit via other countries, the Administrations of these direct transit countries be remunerated for the exclusive use of the facilities made available on the basis of a flat-rate price per circuit.

3.1.2 Under the flat-rate price procedure, the terminal Administrations will ensure that the best possible use is made of the circuits because:

a) if they provide too few circuits, they pay the penalty in the form of the lower quality of service they offer to their subscribers;

b) if they provide too many circuits, they will have to pay more in remuneration and will be penalized financially.

3.1.3 The flat-rate price is fixed by the Administration of the transit country. In fixing these flat-rate prices, the Administrations of countries within a region may find it desirable to follow the principles in ITU-T Recommendations regarding the establishment of recommended values for facilities provided.

3.2 Traffic-unit price procedure

3.2.1 When transit traffic is not handled on direct circuits (e.g. in the case of traffic passing by switched transit), the remuneration for the transit routing through one or more countries should be made to the Administration of the country of the first transit exchange used, which fixes a price per unit of handled traffic. This price should also include the remuneration to the Administrations of other transit countries, if any, and to the Administration of the country of destination, where appropriate.

3.2.2 The procedure of remuneration to the Administration of the country of the first transit exchange for the entire routing of the traffic to the country of destination (remuneration of the first transit exchange) is necessary to meet the situation where traffic may be routed through subsequent transit exchanges, each of which, under automatic operation, will be unable to identify the country of origin of the traffic. This procedure makes the source of the traffic irrelevant for the establishment of accounts. Depending on the accounting methods in force between Administrations, the remuneration of the first transit centre may or may not include payments for use of the facilities of the country of destination.

3.3 Establishment of a switched-transit relation

3.3.1 Before switching traffic via a transit exchange, the Administration of the country of origin will request the country in which the first switching transit exchange is situated for a price quotation per transit-traffic unit to the country of destination.

3.3.2 The Administration of the country to which the first exchange belongs advises the price per traffic unit for handling the traffic from the transit exchange to the country of destination, including remuneration of the latter country where appropriate. This price may be set up by the Administration of the country to which the transit exchange belongs, on the basis either of a special study or of a price already fixed for the transit routing to the same terminal country of traffic originating in other countries.

3.3.3 The Administration of any country with traffic to be routed in transit may, of course, find it advisable to consult the Administrations of several countries to ascertain which transit routing is the most economical.

3.3.4 The consultations by the Administration of the country of origin regarding the transit routing (by switching) of its traffic should be in accordance with the principles of the International Routing Plan described in Recommendation E.171 [3].

3.4 Calculation of the remuneration to the Administration of the country of the first transit exchange on the basis of traffic units

3.4.1 Remuneration to the Administration of the switched transit country depends on the number of traffic units handled by its transit exchange.

3.4.2 For the establishment of international accounts, the Administration of the country of origin should determine the volume of traffic in minutes of conversation time routed each month towards each country of destination through this transit exchange. If it is not technically possible to measure units of conversation time, the originating Administration may use charged minutes (shown on operators' tickets) or measurements of holding time and make the necessary conversion to obtain an assessment of conversation time. The procedure for determining the conversion factor to be used for each relation will be decided by agreement between the Administrations of the originating and transit countries and if necessary, the destination country, taking into account the remarks made in 1.5.2 above.

3.4.3 An alternative version of this system can be contemplated when the traffic to the country of destination routed via a given international transit centre is sufficiently stable; the Administrations of the country of origin and of the country where the first transit exchange is situated might then agree to settlement on the basis of an estimated number of traffic units determined by means of traffic sampling and subject to periodic revision (such as once a year or four times a year).

3.4.4 For the establishment of international accounts for temporary alternative routes, the Administration of the country of origin should determine the volume of traffic in minutes of conversation time routed via the transit Administration. If it is not possible to measure units of conversation time, two alternative methods are described in Annex C and may be used by originating Administrations subject to agreement of the Administrations concerned.

4 Remuneration of the Administration of the country of origin

As far as collect calls and credit card calls, placed with the assistance of an operator in the country of origin, are concerned, subject to agreement between the Administrations concerned, the Administration of the country of destination should pay a flat-rate charge per call to the Administration of the country of origin of the call in addition to the normal share relating to the call. The purpose of this flat-rate charge, the level of which is fixed by bilateral agreement, would be to cover the costs incurred in the country of origin for the establishment of the call.

5 Notes and examples

To assist in an understanding of the new procedures, the following three annexes are provided:

- Annex A – Differences between collection charges and accounting rates.
- Annex B – Examples of the various procedures for remunerating Administrations.
- Annex C – Traffic measurement conversions from seizures or erlangs into conversation time for temporary alternative routes.

ANNEX A

Differences between collection charges and accounting rates

A.1 The collection charge is the charge collected by an Administration from its public for the use of the international telephone service.

A.2 The accounting rate is the rate per traffic unit agreed between Administrations for a given relation, which is used for the establishment of international accounts.

A.3 Whilst, in general, Administrations correlate collection charges and accounting rates, the two cannot always be the same because, for example:

a) in most countries collection charges and accounting rates will be expressed in different currencies;

b) collection charges and accounting rates may be based on different traffic units;

c) the value of national currencies can fluctuate relative to the Special Drawing Right (SDR) or the gold franc;

d) collection charges may be influenced by government fiscal policies.

A.4 As a general principle, in fixing the collection charges, Administrations should make every effort to avoid too large a dissymmetry between the charges applicable in each direction of the same relation.

ANNEX B

Examples of the various procedures for remunerating Administrations

B.1 General

B.1.1 The diagram in Figure B.1 shows a typical pattern of circuit interconnections between various countries, with particular reference to the exchange of traffic between countries A and B carried partly on direct circuits through countries C and D, and partly on switched transit circuits through country E – which in turn may also make use of transit-switching facilities in country F.

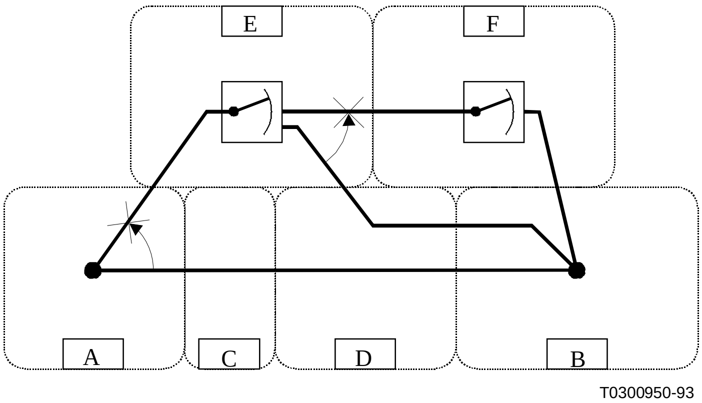

Figure B.1/D.150 – Typical pattern of circuit interconnections between various countries

B.1.2 Three basic situations are examined in relation to the use of this Recommendation:

B.1.2.1 Case 1, where countries A and B account for the total traffic between them on the basis of the accounting revenue division procedure and the sharing of the costs of facilities obtained from countries C, D, E and F.

B.1.2.2 Case 2, where countries A and B account for the total traffic between them on the basis of the traffic unit and/or flat-rate price procedure, each being responsible for accounting forward for the traffic it originates.

B.1.2.3 Case 3, where countries A and B account for some of their traffic on the basis of the accounting revenue division procedure, and the balance of their traffic on the basis of the traffic-unit price procedure.

B.1.3 The selection of methods of remuneration to be used will be agreed jointly between the Administrations of countries A and B taking into account, among other things, the routes and facilities made available and the traffic-unit and flat-rate prices quoted by countries C, D, E and F.

B.2 Case 1 – Use of the accounting revenue division procedure for all traffic

B.2.1 In accordance with the accounting revenue division procedure, the Administrations of countries A and B jointly share the revenues of the traffic between their countries, each paying their appropriate shares (normally 50/50) of:

a) the remuneration due to direct transit countries C and D for the use of the circuit sections traversing those countries; and

b) the costs incurred in use of overflow routes via E and F.

No separate or identified payment is made by the Administration of country A or country B for the facilities made available in country of destination B or A, at least for the portion of traffic using the direct route.

B.2.2 Direct-transit traffic

Remuneration to the Administrations of the direct-transit countries C and D is based on a flat-rate price per circuit and calculated according to the (crowflight) length of the circuit sections on the territories of countries C and D.

B.2.3 Switched-transit traffic handled by the exchange in E

B.2.3.1 The remuneration to the Administration of country E for traffic routed from A to B by switched transit at the exchange E is paid by the Administration of country A. The Administration of country E receives from the Administration of country A a payment calculated from the number of traffic units passed to country B on behalf of the Administration of country A.

Since the accounting revenue division procedure implies that each of the Administrations of the terminal countries A and B pays a share (normally half) of the remuneration due to the Administrations of the transit countries, irrespective of whether these are switched-transit or direct-transit countries, the appropriate share of the remuneration paid by the Administration of country A to the Administration of country E must be debited in the statement of revenue divided between the Administrations of countries A and B.

B.2.3.2 The Administration of country E fixes the price to be paid by the Administration of country A per unit of traffic between the transit exchange E to country B; the Administration of country E must take into consideration:

– its expenses on its own territory;

– the expenses incurred for the direct-transit circuits E-B through country D;

– the expenses for switched transit after overflow in E through the transit exchange in country F.

B.2.3.2.1 In determining expenses in its own territory, E should include expenses for the circuits A-E from the frontier AE to transit exchange E as well as its switching expenses.

B.2.3.2.2 The Administration of country E must also take into account the expenses relating to:

– the section of international circuits provided by the Administration of country B;

– the international exchange and the national extensions in that country.

These expenses may be:

– counted as part of the accounting revenue shared between the Administrations of country A and country B; or

– included in the price fixed by country E, if it is more convenient or even necessary for that country to fix a price (normally one-half) for facilities made available in B. In this case, A should in principle, remunerate B with the appropriate share (normally one-half) of the gross revenue from this stream of traffic, minus:

  i) *the appropriate share* (normally one-half) of the amount due from A to E for the transit of E and D or F, and minus;

  ii) *the whole* of the amount due from A to E for the destination country B.

In practice, it may be difficult for A to obtain the necessary information to split the total remuneration due to E into two parts i) and ii) above because E will have quoted a combined rate for the two routes via D and F and the amounts due to B for these two routes may be different; A will not know the distribution of traffic between the routes via D and F. In such cases, the Administrations of A and B may agree not to take into account the distribution of the traffic on the routes E-D-B and E-F-B and make separate arrangements to ensure the fair division of costs between A and B. For example, B may agree with A on an average share for the extension on its territory of the routes D-B and F-B. These shares would be deducted from the gross revenue for the part of the traffic transited via routes E-D-B and E-F-B. Alternatively, they may agree to dispense with the accounting revenue division procedure for this stream of traffic and account for it in accordance with B.4 below.

B.3 Case 2 – Use of traffic-unit and/or flat-rate price procedure for all traffic

B.3.1 Traffic on direct circuits

B.3.1.1 Remuneration to the Administrations of direct-transit countries

The Administration of the country of origin A remunerates each of the Administrations of countries C and D for use of the sections of circuit A-B. Remuneration is based on a flat-rate price per circuit and is calculated according to the (crowflight) length of the circuit sections on the territories of countries C and D.

B.3.1.2 Remuneration of the country of destination

The Administration of the country of origin A should remunerate the Administration of country B:

– for the circuit section A-B provided by the Administration of country B;

– for the use of the international exchange in B;

– for the national extensions in country B.

Depending on the agreements concluded by the Administrations of countries A and B, the remuneration is based:

a) either on a flat-rate price per circuit; or

b) on the traffic-unit price.

B.3.1.3 One-way operating and both-way operating

In the case of one-way circuits, the remuneration of an international circuit by the Administration of a country of origin presents no difficulty. In the case of both-way circuits, the Administrations of the terminal countries A and B decide how the costs of the international circuits are to be divided after taking account of the outgoing traffic of each.

B.3.2 Switched-transit traffic handled by the exchange in E

B.3.2.1 Remuneration for circuits in the group A-E

With respect to the traffic transiting the transit exchange in country E, the Administration of country A first of all remunerates the Administration of country E for the use of the section of the circuit A-E provided by the Administration of country E.

This remuneration is normally independent of the traffic in transit to country B, because the circuits A-E are used not only for traffic in transit to country B but also for terminal traffic from country A to country E. This is the case when the remuneration paid by the Administrations of countries A and E for terminal traffic between them is based on the flat-rate price procedure.

When the remuneration paid by the Administrations of countries A and E for terminal traffic between them is based on the traffic-unit price procedure, i.e. on the measurement of all traffic routed over the circuits A-E, a meter could be used to measure the whole of the traffic sent from A to E on the circuits A-E, regardless of the destination (i.e. regardless of the country codes); these measurements therefore would include traffic from A to B and A to F.

Alternatively, separate meters could be used in country A to measure the traffic destined for each of the countries B, E and F; this might facilitate the accounting for each of these streams of traffic.

B.3.2.2 Remuneration for transit routing by the exchange E

The Administration of country A remunerates the Administration of country E for routing calls to B beyond the transit exchange in E on the basis of the number of traffic units from A to B passing through the international transit exchange in E. This number of traffic units might be measured by a special meter, reserved for calls to country B, which could be placed in country A on the circuits A-E. The meter is activated only when the country code of country B is sent by the outgoing register of the exchange in country A.

The Administration of country E is credited by the Administration of country A for the transit traffic sent via its international transit exchange to country B on behalf of country A and is entirely responsible for remunerating the Administrations of countries D, F and B. This remuneration is included in the remuneration it makes for the entire traffic emanating from E and sent to country B, since the national traffic originating in E and the transit traffic originating in other countries is consolidated for accounting purposes.

In principle, the remuneration of the Administration of country B by the Administration of country E should comprise not only remuneration for use of the international circuit sections provided by the Administration of country B and remuneration for use of facilities in the international transit exchange in country B, but also any remuneration for use of national extensions in country B.

If the remuneration for the circuits in section A-E (which carry both terminal and transit traffic) is made on a flat-rate price basis which includes remuneration for the international exchange and the national extension, the transit traffic proportion of the amounts so included should be taken into account in calculating the remuneration to be paid by the Administration of country A to the Administration of country E for the traffic which is switched at E and routed to country B.

B.4 Case 3 – Use of the accounting revenue division procedure for the direct traffic between A and B and the traffic-unit price procedure for the traffic switched via country E

B.4.1 This case represents the situation where countries A and B wish to use the accounting revenue division procedure for the traffic carried over the direct A-B circuits and the traffic-unit price procedure for remuneration of the destination country for traffic switched through country E.

B.4.2 Traffic on direct circuits

By way of meters or statistical assessments, the Administration of country A will identify that traffic sent on the direct circuits A-B, and account for that traffic on the basis of the accounting revenue division procedure as in case 1 under B.2.1 above.

B.4.3 Switched-transit traffic handled by the exchange in E

B.4.3.1 By way of meters or statistical assessments, the Administration of country A will identify the traffic sent on the switched-transit route via country E, and account for that traffic on the basis of the traffic-unit price procedure as in case 2 under B.3.2 above.

B.4.3.2 The traffic-unit price quoted by country E in this case will include an amount for the facilities in country B. It should in fact be the same price as quoted in case 2.

ANNEX C

Traffic measurement conversions from seizures or erlangs into conversation time for temporary alternative routes

C.1 Conversion from seizure measurements

For each hour the temporary alternative route is being used, the originating international Network Management Centre should record the number of seizures of the circuits which make up the route and convert this number to conversation time in minutes by the following formula:

$$\text{Conversation time} = (\text{Seizures}) \times (\text{Answer/seizure ratio}) \times (\text{Average call duration})$$

The average call duration should be based on historical records and agreed in advance.

The answer/seizure ratio should be also based on historical records or, if available, on measurements taken during the period the route was used.

C.2 Conversion from erlang measurements

For each hour the temporary alternative route is being used, the originating international Network Management Centre should record the number of erlangs on the route and convert this number to conversation time by the following formula:

$$\text{Conversation time} = (\text{Erlangs}) \times 60 \times (\text{Efficiency ratio})$$

The efficiency ratio is the ratio of conversation time to occupied time in minutes. The difference between the two is call set-up time and occupied time for unsuccessful calls. It should be based on historical measurements and agreed in advance.

References

[1] CCITT Recommendation E.230 (1992), *Chargeable duration of calls*.

[2] CCITT Recommendation E.260 (1988), *Basic technical problems concerning the measurement and recording of call durations*.

[3] CCITT Recommendation E.171 (1988), *International telephone routing plan*.

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 and Internet protocol aspects
Series Z	Languages and general software aspects for telecommunication systems