INTERNATIONAL TELECOMMUNICATION UNION

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OPERATION, NUMBERING, ROUTING AND MOBILE SERVICE

BASIC TECHNICAL PROBLEMS CONCERNING THE MEASUREMENT AND RECORDING OF CALL DURATIONS

ITU-T Recommendation E.260

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation E.260 was published in Fascicle II.2 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation E.260

BASIC TECHNICAL PROBLEMS CONCERNING THE MEASUREMENT AND RECORDING OF CALL DURATIONS

1 Recording call duration

1.1 Technically *call duration* is the interval that elapses between:

- the moment when the clear condition is detected at the point where the recording of the call duration takes place, and
- the moment when the clear condition (clear forward signal) is detected at the same point.

It follows that the apparatus used to record call duration of automatic calls must be capable of detecting the two moments mentioned above and of measuring the interval between them.

1.2 When an Administration using a simplified signalling system has recourse to recording holding times for the establishment of international accounts, it is necessary to have a conversion factor making it possible to obtain the call duration from the holding time. The determination of this conversion factor requires fairly close observation. The ratio of holding time to call duration may not be the same for all the circuits of a single group, so that a fairly large number of circuits must be observed in order to find a reliable conversion factor. Moreover, the holding time also depends on the availability of switching equipment in the incoming country, as well as the reaction of subscribers when they hear ringing tone, busy tone, etc.; the holding time for a given call duration may thus be extremely variable[1)].

2 Discrimination between automatic and semiautomatic calls

Since different accounting procedures are used for automatic and semiautomatic calls, the recording apparatus must be capable of distinguishing between these two types of calls and must record the call duration of automatic calls only.

Discrimination can be effected by one of the following methods:

a) by connecting the measuring apparatus to a point in the exchange through which only automatic traffic is routed;

b) by recording call durations only for calls containing the *discriminating* digit 0 used in automatic working (see the Recommendation Q.104 cited in [2]).

Method b) may be particularly useful when both automatic and semiautomatic calls originate at exchanges within the national network and are routed to the outgoing international exchange over a common group of circuits.

3 Omission of international transit traffic from the records of call duration

All records of call duration will be taken in the outgoing country and will relate to calls originating in that country. It will therefore be necessary, in an international exchange which routes both terminal and international transit traffic, to exclude the call duration of international transit calls passing through the exchange.

It will be difficult to discriminate between originated calls and transit calls on the outgoing international circuits and it may therefore be necessary to segregate this traffic within the exchange and connect the recording apparatus at a point in the exchange where transit traffic is not encountered.

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1) In Recommendation D.150, § 4.1.4 [1] 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.

4 Discrimination according to destination

4.1 The records of call durations obtained by the recording apparatus must be related to particular countries of destination and, if required, to the charging areas of the country of destination; the recording apparatus should therefore be capable of identifying the destination of a call and of associating the measured call duration with this destination.

Note – For drawing up international accounts (apart from frontier relations) it is not necessary to know the origin of the call or the charging zone from which it comes. The differences in shares resulting from different outgoing charging zones in a given country are kept by that country.

4.2 *Incoming country constituting a single charging zone*

Where the recording apparatus is connected to a circuit group carrying only terminal traffic, no discrimination is required. Where, however, a circuit group carries traffic to more than one country, discrimination between these countries must be effected from an examination of the international code for the country and/or the type of seizing signal (terminal or transit) which is sent over the international circuits.

4.3 *Incoming country consisting of several charging zones*

If the accounting procedure agreed between two countries demands the production of separate records of call durations for calls made to each charging zone in an incoming country, the recording apparatus must be arranged to discriminate between the calls to the different charging zones according to the first one or first two digits of the called station's national (significant) number[2)] (see Recommendation E.163).

4.4 *Special frontier arrangements*

To take account of the special system of charging for frontier relations (reduced charges between neighbouring frontier zones), special steps will have to be taken to discriminate between automatic calls in frontier relations and other automatic calls. This discrimination will be made every time that frontier traffic is routed wholly or partly (overflow) by long-distance international circuits having devices for measuring call duration.

This discrimination will in general necessitate:

a) further analysis of the national (significant) number of the called subscriber than the one which is quoted in Recommendation E.163, and

b) the determination of the origin of the call, since frontier charges depend on the distance between the outgoing and the incoming frontier zones.

5 Discrimination according to route and destination

In general there will be little difficulty in determining the route taken by a call on leaving the outgoing international exchange. If the recording apparatus is connected to the international circuits, then of course the recordings obtained will be appropriate to the route in question. If, however, the recording apparatus is connected to a point in the exchange remote from the outgoing circuits and the call to a particular country has the choice of more than one route, then information in respect of the actual route taken by the call must be supplied to the recording apparatus.

6 Distribution of traffic in an international exchange for the purpose of measuring call durations

By way of example, Figure 1/E.260 is given hereafter showing how traffic should be distributed in an international exchange so as to take account of the provisions above.

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2) See the definition of the national (significant) number in Recommendation E.160.

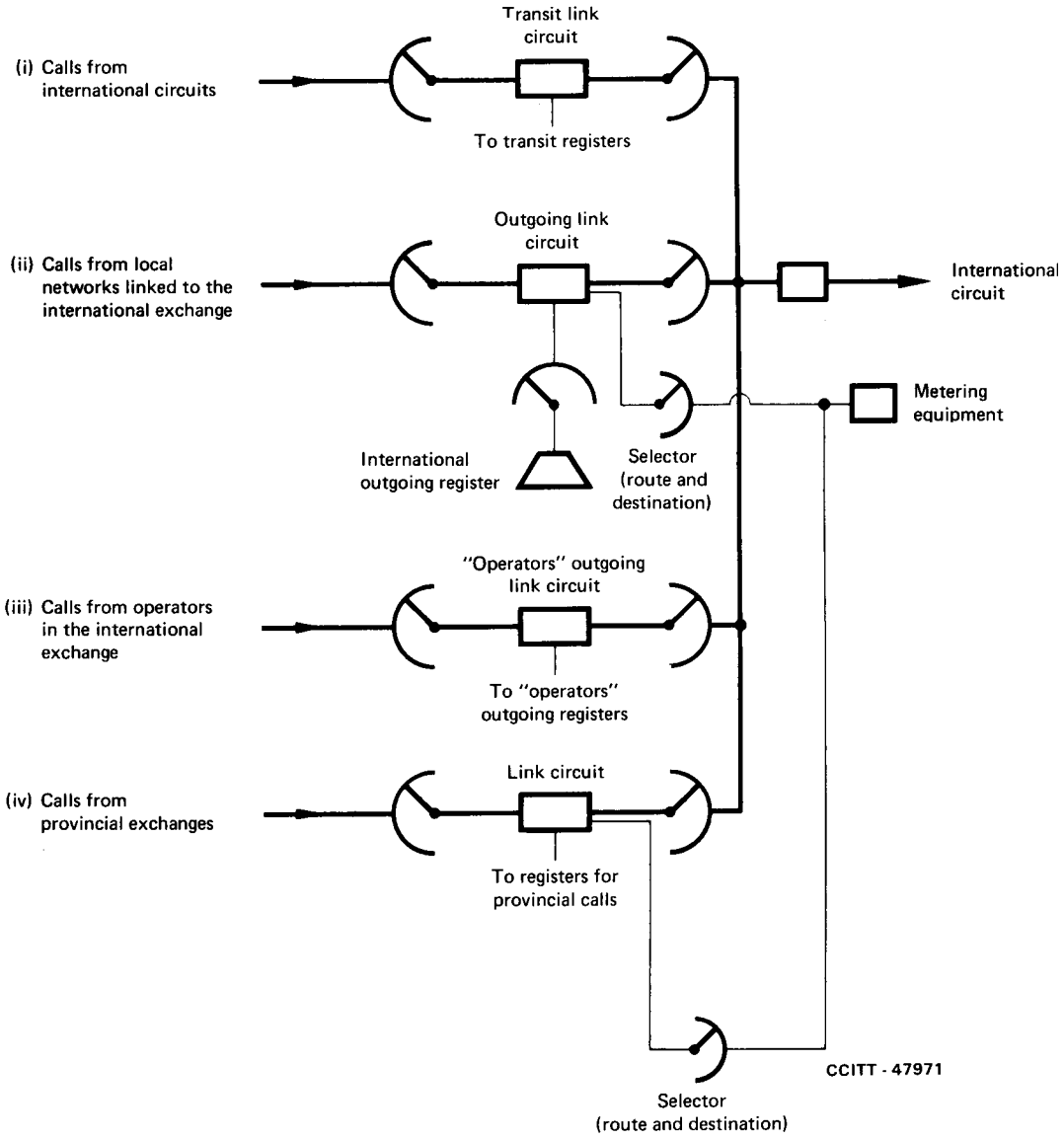

FIGURE 1/E.260

Diagram giving an example of traffic distribution in an international exchange

The traffic passing through the international exchange is divided into the following four groups, as shown on the figure:

i) international transit traffic;

ii) automatic traffic (originated locally);

iii) semiautomatic traffic (originated locally);

iv) combined automatic and semiautomatic traffic from provincial exchanges.

These groups would employ independent groups of link circuits and registers. Only group ii) and possibly group iv) would be involved in measuring call duration.

The following auxiliary equipment is envisaged:

a) for each link circuit in groups ii) and iv), a selecting device capable of dealing with every possible combination of route/country or *charging zone* destination;

b) for each link circuit in group iv), a device to take care of the discrimination between semiautomatic and automatic traffic;

c) for registers in groups ii) and iv), equipment for analyzing country codes and if necessary an appropriate number of digits of the national (significant) number of the called subscriber in order to discriminate between charging zones (see Recommendation E.163, § 1.2);

d) for registers in group iv), a device to recognize the discriminating digit 0 used for automatic working;

e) a means of recording the call duration for each combination of route/country or charging zone destination.

References

[1] CCITT Recommendation *New system for accounting in international telephony*, Rec. D.150, § 4.1.4.

[2] CCITT Recommendation *Language digit or discrimination digit*, Rec. Q.104, § 1.4.2.