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INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

SERVICE CAPABILITIES

SUPPLEMENTARY SERVICES IN ISDN

ADVICE OF CHARGE: CHARGING INFORMATION AT THE END OF THE CALL (AOC-E)

ITU-T Recommendation I.256.2c

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation I.256.2c was prepared by the ITU-T Study Group I (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 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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Recommendation I.256.2c

ADVICE OF CHARGE: CHARGING INFORMATION AT THE END OF THE CALL (AOC-E)

(Helsinki, 1993)

1 Definition

For the purposes of this Recommendation, the following definition applies.

The **Advice of charge: Charging information at the end of the call (AOC-E)** supplementary service enables a user to receive information on the recorded charges for a call when the call is terminated.

2 Description

The AOC-E supplementary service shall apply to the basic access and the primary rate access.

The AOC-E supplementary service provides the served user with charging information for a call when the call is terminated. The information can be sent for all calls, or on a per call basis. The charge information given shall relate to the charges incurred on the network to which the served user is attached.

2.1 Structure and contents of charging information

1) *Type of charging information*

– Total charges

This type of charging information is sent to the served user when the call is terminated, and indicates the total charges recorded for the call.

NOTE 1 – Some networks will include in this information, charges which have been incurred by the use of some supplementary services.

2) *Recorded charges*

Only one of the following types of recorded charges shall be included.

NOTE 2 – If different types of charging units apply, the recorded number of charging units for each type of charging unit may be given.

– Recorded number of charging units

This information indicates the number of charging units incurred for the call. Sub-unit shall be:

- number of charging units (integer value);
- optional: type of charging unit (see Note 3).

– Recorded number of currency units

This information indicates the number of currency units incurred for the call. Sub-units shall be:

- currency identifier;
- currency amount [integer value and a multiplier (see Note 4)].

– Free of charge

This information indicates that there is no charge to the served user for this call.

– Not available

This information indicates that recorded charges are not available. The network is not required to give a reason.

NOTE 3 – Type of charging unit shall be indicated as an integer value from 1 to 16. Each service provider shall specify their use and significance of these values.

NOTE 4 – The multiplier shall have one of the following values: 0.001, 0.01, 0.1, 1, 10, 100 or 1000.

3) *Billing identification*

Only one of the following types of billing identification shall be included:

– Normal charging

This billing identification indicates that charges are incurred due to normal charging.

– Reverse charging

This billing identification indicates that charges are incurred due to reverse charging.

– Credit card charging

This billing identification indicates that charges apply to a credit card.

– Call forwarding unconditional

This billing identification indicates that charges are incurred due to call forwarding unconditional.

– Call forwarding busy

This billing identification indicates that charges are incurred due to call forwarding busy.

– Call forwarding no reply

This billing identification indicates that charges are incurred due to call forwarding no reply.

– Call deflection

This billing identification indicates that charges are incurred due to call deflection.

– Call transfer

This billing identification indicates that charges are incurred due to call transfer.

2.2 Application of charging information

"Total charges" can be given in charging units or in currency units, or the value "free of charge" or "not available" can be given to the served user. The information should include the total cost for the call. The information can be accompanied by a billing identification. If the "billing identification" is not included, the default value shall be interpreted as "normal charging".

2.3 Specific terminology

For the purposes of this Recommendation, the following definition applies.

Served user: The user of a particular ISDN number who is requesting that charging information shall be provided.

AOC-E: Advice of Charge: charging information at the end of the call.

2.4 Qualifications on applicability to telecommunication services

This supplementary service is applicable to all circuit switched telecommunication services.

3 Procedures

3.1 Provision/withdrawal

The AOC-E supplementary service shall either be provided on a subscription basis or be generally available. The AOC-E supplementary service can be offered with one subscription option. Only one value can be selected.

Subscription option	Value
Activation	For all calls automatically On a per call basis

Withdrawal shall be at subscriber request or for administrative reasons.

3.2 Normal procedures

3.2.1 Activation/deactivation/registration

Activation of the AOC-E supplementary service shall either occur for all calls at provision, or it shall be possible to activate the supplementary service on a per call basis. The activation on a per call basis shall occur at call request.

3.2.2 Invocation and operation

The charging information shall be provided by the network when the call is terminated.

3.3 Exceptional procedures

3.3.1 Activation/deactivation/registration

Not applicable.

3.3.2 Invocation and operation

If the charging information related to a call is not available this should be indicated to the served user.

3.4 Alternative procedures

None identified.

4 Network capabilities for charging

This Recommendation does not cover charging principles. Future Recommendations in the D-Series are expected to contain that information.

It shall be possible to charge the subscriber accurately for the service.

5 Interworking requirements

The AOC-E supplementary service shall be supported across the internetwork interface between ISDNs (i.e. public or private).

6 Interactions with other supplementary services

6.1 Call waiting

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.2 Call transfer

If a call is transferred and the transferring user is charged for either or both calls, then as a network option, that user shall be informed of the charge at the end of the resulting transferred call.

6.3 Connected line identification presentation

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.4 Connected line identification restriction

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.5 Calling line identification presentation

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.6 Calling line identification restriction

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.7 Closed user group

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.8 Conference calling

a) *Conference controller*

1) Invocation of the conference, add-on supplementary service from the idle state

– If the conference controller can activate the AOC-E supplementary service at the same time the conference, add-on supplementary service is invoked.

2) Invocation of the conference, add-on supplementary service from an active call

– If the AOC-E supplementary service has been activated for the initial call, then it shall automatically be activated also for the conference.

– If the AOC-E supplementary service has not been activated for the initial call, then the conference controller can activate the AOC-E supplementary service at the same time the conference, add-on supplementary service is invoked.

3) Addition of a call to a conference

For calls between the conference controller and potential conferees which are outside the conference call, the normal procedures for the AOC-E supplementary service shall apply. When a call for which AOC-E supplementary service has been activated, is added to the conference, then charging information shall be given as if the call was terminated at the moment it is added to the conference.

NOTE 1 – Further charging resulting from communication with the new conferee shall be considered to be part of the charging for the conference.

4) Creating a private communication with one of the parties

In this case the private communication shall be considered as a new call between the conference controller and the individual party. If the AOC-E supplementary service is active for the conference, it shall in addition be automatically activated for the new call when the private communication is established.

5) Terminating the conference

When the conference is terminated and AOC-E supplementary service had been activated for the conference, then the overall charges for the conference shall be sent to the conference controller. If the conference, add-on supplementary service was invoked from an active call and AOC-E supplementary service was activated for that call, then the charging information shall include charges for the initial call.

6) Other operation on the conference

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

NOTE 2 – Some networks may not support the AOC-E supplementary service in conjunction with the conference, add-on supplementary service, or may only give partial information, e.g. due to off-line processing of the charges associated to the conference, add-on supplementary service. In this case an indication that the AOC-E supplementary service is not available shall be given on invocation of the conference, add-on supplementary service if the AOC-E supplementary service is activated.

b) *Conferees*

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

6.9 Direct dialling-In

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.10 Call diversion

6.10.1 Call forwarding busy

– *Original calling user:* No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

– *Forwarding user:* When a call is forwarded and the forwarding user is charged for the forwarded part of the call, the charging information can, as a network option, be transferred to the forwarding user when the call is terminated.

6.10.2 Call forwarding no reply

– *Original calling user:* No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

– *Forwarding user:* When a call is forwarded and the forwarding user is charged for the forwarded part of the call, the charging information can, as a network option, be transferred to the forwarding user when the call is terminated.

6.10.3 Call forwarding unconditional

– *Original calling user:* No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

– *Forwarding user:* When a call is forwarded and the forwarding user is charged for the forwarded part of the call, the charging information can, as a network option, be transferred to the forwarding user when the call is terminated.

6.10.4 Call deflection

– *Original calling user:* No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

– *Deflecting user:* When a call is deflected and the deflecting user is charged for the deflected part of the call, the charging information can, as a network option, be transferred to the deflecting user when the call is terminated.

6.11 Line hunting

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.12 Three-party

– *Charges for the different connections within the three-party supplementary service:* At the end of each call for which the AOC-E supplementary service was activated, the served user shall be informed about the charges incurred.

– *Charges for the use of the three-party supplementary service:* As a network option, the charging information can be sent to the served user.

NOTE – However, in some networks no charging information can be given in this case, e.g. due to off-line processing of the charges.

6.13 User-to-user signalling

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.14 Multiple subscriber number

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.15 Call hold

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.16 Advice of charge

6.16.1 AOC, charging information at call set-up time

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.16.2 AOC, charging information during the call

If both the advice of charge: charging information during the call supplementary service and the AOC-E supplementary service are activated, then when the call is terminated, only the information related to the AOC-E supplementary service shall be given.

6.16.3 AOC, charging information at the end of the call

Not applicable.

6.17 Multi-level precedence and preemption

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.18 Priority

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.19 Malicious call identification

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.20 Outgoing call barring

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.21 Reverse charging

– *Reverse charging cases A, C and D:* The called user may receive advice of charge information with the billing identification set to "reverse charging". The calling user should be given a "free of charge" indication.

– *Reverse charging case B:* Each user should be given advice of charge for the part of the call they are charged for. The called user should also receive the billing identification "reverse charging".

NOTE – Advice of charge information can only be provided to a called user when this user has the value for the activation subscription option set to "for all calls automatically".

6.22 Sub-addressing

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

7 Dynamic description

The dynamic description of this type of Advice of Charge service is shown in Figure 1.

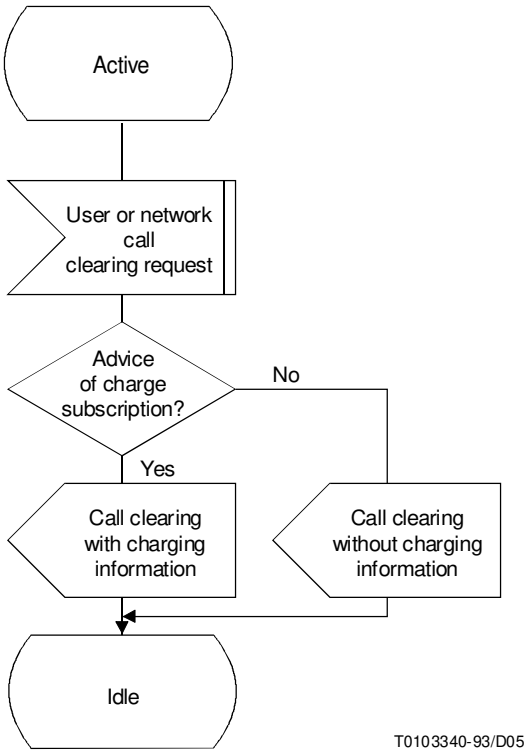

FIGURE 1/I.256.2c

Charging information at the end of the call