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SERVICE CAPABILITIES SUPPLEMENTARY SERVICES IN ISDN

ADVICE OF CHARGE : CHARGING INFORMATION AT CALL SET-UP TIME (AOC-S)

ITU-T Recommendation I.256.2a

(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.2562.a 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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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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ADVICE OF CHARGE: CHARGING INFORMATION AT CALL SET-UP TIME (AOC-S)

(Helsinki, 1993)

1 Definition

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

The **Advice of Charge: charging information at call set-up time (AOC-S)** supplementary service: Enables a user to receive information about the charging rates at call set-up time and also to receive further information during the call if there is a change of charging rates.

2 Description

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

The AOC-S supplementary service provides the served user with information about the charging rates at call establishment. In addition, the served user shall be informed if a change in charging rates takes place during the call. 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*

   – charging rate information.

2) *Charged item*

   The following charged items can be included. A charged item shall only be included if that item contains information concerning the charging applied to the call.

   NOTE 1 – Network providers will only use those charged items which are appropriate to that service provider's charging mechanism. Thus, in some networks, users may/may not receive some of these items or combinations of items. Different networks could give information about the same call in different ways.

   – Basic communication

     This charged item indicates the rate to be applied to the basic communication. If the rate changes, the served user shall be informed.

   – Call attempt

     This charged item indicates the cost applied for successful call attempt before called user accepts the call.

   – Call set-up

     This charged item indicates the cost applied for the connection to the called user after call acceptance.

   – Special charging arrangement

     This charged item indicates that a special arrangement exists for calculating the cost of the call.

     NOTE 2 – The use of this charged item is outside the scope of the standard. It is a matter for the network operator and the user to which it is sent.

– User-to-user information transfer

This charged item indicates the rate to be applied to the transfer of user-to-user information. If the rate changes, the served user shall be informed.

– Special service or operation of supplementary services

This charged item indicates the rate to be applied for a special service or for the operation of requested supplementary services.

3) *Charging rate*

The following charging rates can be associated with the above charged items. Further information is given in 2.2.

a) Duration rate

The duration rate gives the currency value for a particular time unit, together with the length of the time unit.

– Price per time unit and time unit

Sub-units shall be:

* currency identifier;

* currency amount [integer value and a multiplier (see Note 6)];

* length of time unit [integer value and a scale (see Note 4)];

* type of charging (unit charging or continuous charging);

* optional: granularity [integer value and a scale (see Note 4)].

This specifies the time unit applied for calculation of charges by the network.

NOTE 3 – The parameter described to express the duration rate provides a solution both for continuous charging as well as for charging with charging units. It is up to the network operator to specify the value of the parameter in a manner that it will fit with the continuous charging method or with the charging unit method.

b) Specific rate

– Free of charge

This specific rate indicates that there is no charge to the served user for the associated charged item.

– Flat rate (a fixed currency value per event)

This specific rate indicates a fixed currency value per event. Sub-units shall be:

* currency identifier;

* currency amount [integer value and a multiplier (see Note 6)];

– Special charging code N

This specific rate indicates a code which can identify a charging algorithm.The sub-unit shall be:

* N (integer value from 1 to 10)

– Not available

This specific rate indicates that the charging rate is not available. The network is not required to give a reason.

c) Volume rate

The volume rate gives the currency value for a particular volume unit, together with the type of volume unit.

– Price per volume unit and volume unit

Sub-units shall be:

* currency identifier;

* currency amount [integer value and a multiplier (see Note 6)];

* type of volume unit (see Note 5);

* optional: type of charging (unit charging or currency charging).

NOTE 4 – The scale of time units shall have one of the following values: 0.01 s, 0.1 s, 1 s, 10 s, 1 min, 1 hour or 24 hours.

NOTE 5 – Type of volume unit shall have one of the following values: octet, segment or message to which UUI has been attached.

NOTE 6 – The multiplier shall have one of the following values: 0.001, 0.01, 0.1, 1, 10, 100 or 1000.

2.2 Application of charging information

Charging information shall be given either in currency units or as special charging arrangement.

2.2.1 Charging information in currency units

"Basic communication", if included, shall be associated with a charging rate having one of the following values:

- price per time unit and time unit;
- flat rate (a fixed currency value per event);
- free of charge;
- special charging code;
- not available.

"Call attempt" and "call set-up" shall only be included in the initial charging information sent to the served user. If these charged items are included, they shall be associated with a charging rate having one of the following values:

- flat rate (a fixed currency value per event);
- free of charge;
- special charging code;
- not available.

"Special service or operation of supplementary services" shall only be included if the served user has requested a special service or a supplementary service. If this charged item is included, it shall be associated with a charging rate having one of the following values:

- price per time unit and time unit;
- flat rate (a fixed currency value per event);
- free of charge;
- special charging code;
- not available.

"User-to-user information transfer" shall only be included if the served user has requested the User-to-user signalling supplementary service. If this charged item is included, it shall be associated with a charging rate having one of the following values:

- price per volume unit and volume unit;
- free of charge;
- special charging code;
- not available.

If a charged item is not included, the default value shall be interpreted as "free of charge".

2.2.2 Charging information as special charging arrangement

The associated charging rate for "special charging arrangement" shall have the value "special charging code N". When the charged item "special charging arrangement" is included, none of the other charged items shall be included.

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-S: Advice of Charge: charging information at call set-up time.

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-S supplementary service shall either be provided on a subscription basis or be generally available. The AOC-S 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-S 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 during call establishment or at the latest when the calling user is informed that the called user has accepted the call.

Where there is a change in the charging rate during the call, the network shall send information about the new charging rate to be applied for the call.

If the call is free of charge, or becomes free of charge during the active phase (e.g. in case of reverse charging) the free-of-charge indication shall be given.

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 shall be indicated to the served user using the specific rate “not available”.

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

6 Interaction 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

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

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

The conference controller can activate the AOC-S supplementary service at the same time the conference, add-on supplementary service is invoked. Updated charging rate information for the whole conference shall be given to the conference controller if the charging rate for the conference is changed (only a single charge advice indicating the charging rate for the whole conference shall be given).

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

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

– If the AOC-S supplementary service has not been activated for the initial call, then the conference controller can activate the AOC-S 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-S supplementary service shall apply. When a call for which AOC-S supplementary service has been activated, is added to the conference, then further charging rate information shall not be given for this call individually.

NOTE 1 – Further charging rate information for communication with the new conferee shall be considered to be part of the charging rate information 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-S 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

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

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-S 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-S supplementary service is not available shall be given on invocation of the conference, add-on supplementary service if the AOC-S 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:* The call is set-up by the network and the forwarding user is not involved in the call so no information shall be given. The user may use the supplementary service advice of charge: charging information at the end of the call.

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:* The call is set-up by the network and the forwarding user is not involved in the call so no information shall be given. The user may use the supplementary service advice of charge: charging information at the end of the call.

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:* The call is set-up by the network and the forwarding user is not involved in the call so no information shall be given. The user may use the supplementary service advice of charge: charging information at the end of the call.

6.10.4 Call Deflection

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

– *Deflecting user:* The call is set-up by the network and the deflecting user is not involved in the call so no information shall be given. The user may use the supplementary service advice of charge: charging information at the end of the call.

6.11 Line Hunting

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

6.12 Three-Party

The served user shall be informed about the charging rate for those calls which that user has established.

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

Not applicable.

6.16.2 AOC, charging information during the call

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

6.16.3 AOC, charging information at the end of the call

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

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 case A and D:* If reverse charging is accepted by the called user at call set-up time, advice of charge may be given to the called user for this call. The calling user should be given a "free of charge" indication.

– *Reverse charging case B and C:* If reverse charging is accepted by the called user during the active phase of the call, then a change in charging rate may be given to the called user after acceptance of reverse charging. The calling user should be given a "free of charge" indication at the time the called user accepts the reverse charging.

NOTES

1 For reverse charging case C, the called user will not be informed of the charging rate applied for the call before the acceptance of reverse charging.

2 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 is shown in Figures 1 and 2.

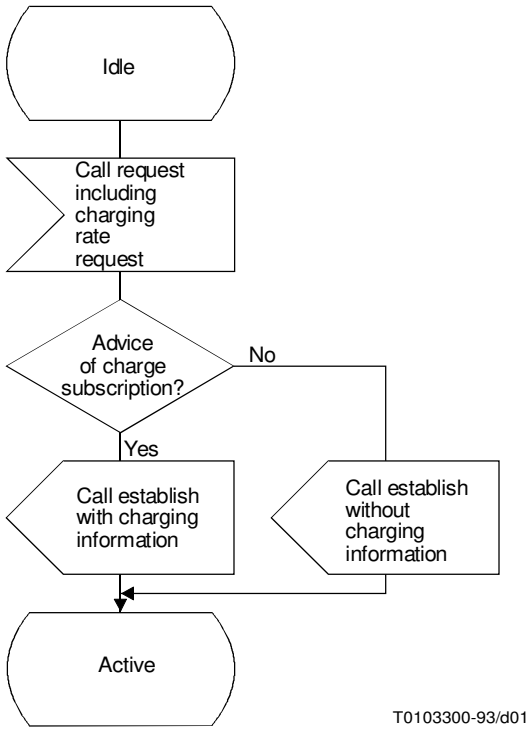

FIGURE 1/I.256.2a

Charging information – Charging rate request at call set-up time

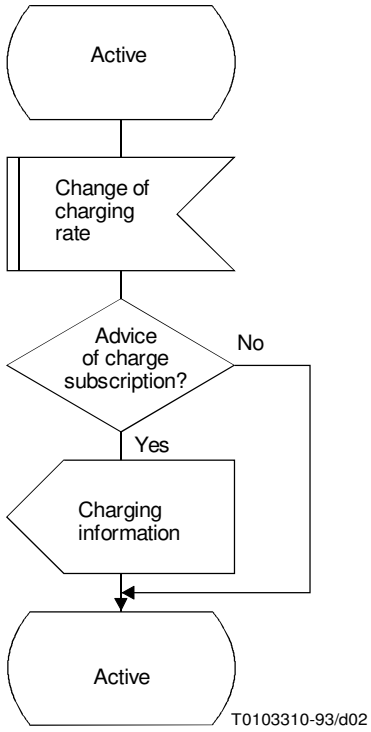

FIGURE 2/I.256.2a

Charging information – Change of charging rate at the active phase of a call