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at call set-up time (AOC-S) supplementary service  
Service description**

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## Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 1 aspects (overall service description) for the Advice Of Charge: charging information at call set-up time (AOC-S) supplementary service. Stage 2 and stage 3 aspects are detailed in ETS 300 181 (1992) and ETS 300 182 (1992), respectively.

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## 1 Scope

This standard defines the stage one of the Advice Of Charge: charging information at call set-up time (AOC-S) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

This standard defines the interworking requirements of private ISDNs with the public ISDN.

In addition this standard specifies the base functionality where the service is provided to the user via a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN but does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of this standard.

Interaction with supplementary services not listed in Clause 8 are outside the scope of this standard.

The 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.

The AOC-S supplementary service is applicable to all circuit-switched telecommunications services.

This standard is applicable to the stage two and stage three standards for the ISDN AOC-S supplementary service. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement, (i.e. as strict command or prohibition, as authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

## 2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.130 (1988): "Method for the characterisation of the telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [4] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

### 3 Definitions

For the purpose of this standard, the following definitions apply:

**Integrated Services Digital Network (ISDN):** see CCITT Recommendation I.112 [2], § 2.3, definition 308.

**Service; telecommunications service:** see CCITT Recommendation I.112 [2], § 2.2, definition 201.

**Supplementary service:** see CCITT Recommendation I.210 [3], § 2.4.

**Served user:** the user to whom the AOC-S supplementary service is provided.

**Basic access:** see CCITT Recommendation Q.9 [4], § 1, definition 1551.

**Primary rate access:** see CCITT Recommendation Q.9 [4], § 1, definition 1552.

### 4 Symbols and abbreviations

AOC-S                      Advice Of Charge: charging information at call set-up time

ISDN                        Integrated Services Digital Network

### 5 Description

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

NOTE:                      In some cases, e.g. due to off-line processing of charges, or timing considerations, the charge calculated by the user or the user's equipment may not precisely reflect the actual cost incurred.

The structure, contents and application of charging information is given in Annex A.

### 6 Procedures

#### 6.1 Provision and 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.



Table 1

Subscription option	Values
Invocation	<ul style="list-style-type: none"> <li>- For all calls automatically</li> <li>- On a per call basis (NOTE)</li> </ul>
NOTE: If the AOC-S supplementary service is generally available, then the value "on a per-call basis" should be the default value.	

Withdrawal shall be at the request of the subscriber or for service provider reasons.

## 6.2 Normal procedures

### 6.2.1 Activation, deactivation and registration

The AOC-S supplementary service shall be activated on provision and deactivated on withdrawal.

The AOC-S supplementary service requires no registration.

### 6.2.2 Erasure

Not applicable.

### 6.2.3 Invocation and operation

Depending on the value of the subscription option, the AOC-S supplementary service shall be invoked on all calls, or it can be invoked by the served user on a per call basis.

If the AOC-S supplementary service is provided on a per call basis, the user shall request the AOC-S supplementary service when originating a call in order to invoke the AOC-S supplementary service.

The charging information shall be provided by the network during call establishment. This can occur, at the latest, when the calling user is informed that the called user has accepted the call.

When 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 a call is free of charge, or becomes free of charge during the active phase (e.g. in case of reverse charging), the specific rate "free of charge" shall be given.

The structure, contents and application of charging information is given in Annex A.

### 6.2.4 Interrogation

Not applicable.

## 6.3 Exceptional procedures

### 6.3.1 Activation, deactivation and registration

Not applicable.

### 6.3.2 Erasure

Not applicable.

### **6.3.3 Invocation and operation**

If a served user who is not provided with the AOC-S supplementary service attempts to invoke the AOC-S supplementary service, then the attempt to invoke the AOC-S supplementary service shall be rejected by the network and the user shall be informed of the reason.

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".

If for any reason, no charging information is provided at all on a call, then the user shall assume that the information is not available. The user cannot assume that the call is free of charge.

If the network recognises that the information for a particular charged item is incomplete, the specific rate "not available" shall be used for that charged item.

### **6.3.4 Interrogation**

Not applicable.

## **7 Intercommunication considerations**

### **7.1 Interworking with non-ISDNs**

There is no impact on the operation of the AOC-S supplementary service.

### **7.2 Interworking with private ISDNs**

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

## **8 Interaction with other supplementary services**

### **8.1 Advice of charge services**

#### **8.1.1 Charging information at call set-up time**

Not applicable.

#### **8.1.2 Charging information during the call**

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

#### **8.1.3 Charging information at the end of the call**

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

### **8.2 Call waiting**

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

### **8.3 Call hold**

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

#### **8.4 Explicit call transfer**

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

#### **8.5 Number identification services**

##### **8.5.1 Calling line identification presentation**

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

##### **8.5.2 Calling line identification restriction**

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

##### **8.5.3 Connected line identification presentation**

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

##### **8.5.4 Connected line identification restriction**

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

#### **8.6 Closed user group**

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

#### **8.7 Completion of calls to busy subscriber**

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

#### **8.8 Conference services**

##### **8.8.1 Conference call, add-on**

###### **8.8.1.1 Conference controller**

NOTE 1: Some networks may not support the AOC-S supplementary service in conjunction with the conference call, add-on supplementary service, or may only give part of the information, e.g. due to off-line processing of the charges associated to the conference call, add-on supplementary service. In the former case an indication that the AOC-S supplementary service is not available should be given on invocation of the conference call, add-on supplementary service if the AOC-S supplementary service had been invoked.

#### **Invocation of the conference call, add-on supplementary service from the idle state:**

The conference controller can invoke the AOC-S supplementary service at the same time as the conference call, 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, i.e. each time the rate changes, the new charge rate shall be given by means of a single indication which shall apply to the whole conference.

**Invocation of the conference call, add-on supplementary service from an active call:**

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

If the AOC-S supplementary service has not been invoked for the initial call, then the conference controller can invoke the AOC-S supplementary service at the same time as the conference call, add-on supplementary service is invoked.

**Addition of a call to a conference:**

For calls between the conference controller and potential conferees which are outside the conference, the normal procedures for the AOC-S supplementary service shall apply. When a call for which AOC-S supplementary service has been invoked, is added to the conference, then further charging rate information shall not be given for this call.

NOTE 2: Further charging rate information for communication with the new conferee is considered to be part of the charging rate information for the conference.

**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 has been invoked for the conference, it shall be invoked automatically for the new call when the private communication is established.

**Other operation on the conference:**

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

**8.8.1.2 Conferees**

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

**8.8.2 Meet-me conference**

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

**8.9 Direct dialling in**

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

**8.10 Diversion services**

**8.10.1 Call forwarding unconditional**

**Original calling user:**

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

**Forwarding user:**

Not applicable.

#### **8.10.2 Call forwarding busy**

**Original calling user:**

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

**Forwarding user:**

Not applicable.

#### **8.10.3 Call forwarding no reply**

**Original calling user:**

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

**Forwarding user:**

Not applicable.

#### **8.10.4 Call deflection**

**Original calling user:**

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

**Deflecting user:**

Not applicable.

#### **8.11 Freephone**

**Calling user:**

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

**Called user:**

Information for the AOC-S supplementary service shall not be sent to the called freephone user.

#### **8.12 Malicious call identification**

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

#### **8.13 Multiple subscriber number**

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

#### **8.14 Subaddressing**

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

### **8.15 Terminal portability**

If the charging rate is changed when a call is in the suspended state, the new charging rate shall be given when the call is resumed.

### **8.16 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.

### **8.17 User-to-user signalling**

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

## **Annex A (normative): Structure, contents and application of charging information**

### **A.1 Introduction**

This annex gives the structure and contents of the charging elements supplied by the network. In addition, it indicates what information is supplied with the different charged items.

### **A.2 Structure and contents of charging information**

#### **A.2.1 Type of charging information**

The following type of charging information can be supplied:

- charging rate information.

#### **A.2.2 Charged items**

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 may give information about the same call in different ways.

- **"basic communication"**

This charged item indicates the rate to be applied to the basic communication between the users. If the rate changes, the served user shall be informed by a repetition of this charged item indicating the new rate.

- **"call attempt"**

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

- **"call setup"**

This charged item indicates the cost applied when the connection between the users is established.

- **"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. Its meaning 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 by a repetition of this charged item indicating the new rate.

- **"operation of supplementary services"**

This charged item indicates the cost applied for the operation of requested supplementary services.

### A.2.3 Charging rate

The charging rates contained in this subclause can be associated with the above charged items. Further information is given in Clause A.3.

In the subclauses below, the multiplier in the currency amount shall have one of the following values: 0,001; 0,01; 0,1; 1; 10; 100; or 1000.

#### A.2.3.1 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.**

The following sub-units shall be included:

- currency identifier;
- currency amount (integer value and a multiplier);
- length of time unit (integer value and a scale);
- type of charging (step function or continuous).

NOTE: "step function" means that a charge is incurred for the time unit, or part thereof, i.e. a charge is incurred at the start of each time unit. "continuous" means that charges are incurred evenly throughout.

The following sub-unit can be included:

- granularity (integer value and a scale); this specifies the time unit applied for calculation of charges by the network.

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.

#### A.2.3.2 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.**

The following sub-units shall be included:

- currency identifier;
- currency amount (integer value and a multiplier);
- type of volume unit.

The type of volume unit shall have one of the following values: octet; segment; or message to which user-to-user information has been attached.



### A.2.3.3 Specific rate

The specific rate gives the specific charge value. The following specific rates can be given:

- **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. The following sub-units shall be included:

- currency identifier;
- currency amount (integer value and a multiplier).

- **special charging code N.**

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

- N (integer value from 1 to 10).

- **not available.**

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

## A.3 Application of charging information

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

### A.3.1 Charging information in currency units

The charged item relating to "basic communication" 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.

The charged item relating to "call attempt" and "call setup" shall only be included in the initial charging information sent to the served user. These charged items 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.

The charged item relating to "operation of supplementary services" shall only be included if the served user has requested a supplementary service. This charged item 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.

The charged item relating to "user-to-user information transfer" shall only be included if the served user has requested the user-to-user signalling supplementary service. This charged item shall be associated with a charging rate having one of the following values:

- price per volume unit and volume unit;
- flat rate;
- 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".

### **A.3.2 Charging information as special charging arrangement**

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

## History

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