

INTERNATIONAL  
STANDARD

ISO/IEC  
15049

First edition  
1997-05-15

---

---

---

**Information technology —  
Telecommunications and information  
exchange between systems — Private  
Integrated Services Network —  
Specification, functional model and  
information flows — Advice of charge  
supplementary services**

*Technologies de l'information — Télécommunications et échange  
d'information entre systèmes — Réseau privé à intégration de services —  
Spécification, modèle fonctionnel et flux d'informations — Orientation des  
services supplémentaires de charge*



Reference number  
ISO/IEC 15049:1997(E)

## Contents

Foreword	v
Introduction	vi
<b>1 Scope</b>	1
<b>2 Conformance</b>	1
<b>3 Normative references</b>	1
<b>4 Definitions</b>	2
<b>4.1 External definitions</b>	2
<b>4.2 Other definitions</b>	3
<b>5 List of acronyms</b>	3
<b>6 SS-AOC-S stage 1 specification</b>	4
<b>6.1 Description</b>	4
<b>6.1.1 General description</b>	4
<b>6.1.2 Qualifications on applicability to telecommunication services</b>	4
<b>6.2 Procedures</b>	4
<b>6.2.1 Provision/withdrawal</b>	4
<b>6.2.2 Normal procedures</b>	4
<b>6.2.3 Exceptional procedures</b>	4
<b>6.3 Interactions with other supplementary services and ANFs</b>	5
<b>6.3.1 Advice of charge: charging information during the call (AOC-D)</b>	5
<b>6.3.2 Advice of charge: charging information at the end of the call (AOC-E)</b>	5
<b>6.3.3 Calling Line Identification Presentation (CLIP)</b>	5
<b>6.3.4 Connected Line Identification Presentation (COLP)</b>	5
<b>6.3.5 Calling/Connected Line Identification restriction (CLIR)</b>	5
<b>6.3.6 Calling Name Identification presentation (CNIP)</b>	5
<b>6.3.7 Connected Name Identification Presentation (CONP)</b>	5
<b>6.3.8 Calling/Connected Name Identification restriction (CNIR)</b>	5
<b>6.3.9 Call Diversion (CFU/CFB/CFNR/CD)</b>	5
<b>6.3.10 Call Interception (CINT)</b>	5
<b>6.3.11 Call Intrusion (CI)</b>	5
<b>6.3.12 Call Offer (CO)</b>	5
<b>6.3.13 Call Transfer (CT)</b>	6
<b>6.3.14 Completion of Calls to Busy Subscribers (CCBS)</b>	6
<b>6.3.15 Completion of Calls on No Reply (CCNR)</b>	6
<b>6.3.16 Do Not Disturb (DND)</b>	6
<b>6.3.17 Do Not Disturb Override (DNDO)</b>	6
<b>6.3.18 Path replacement (ANF-PR)</b>	6
<b>6.3.19 Recall (RE)</b>	6

<b>6.4 Interworking considerations</b>	<b>6</b>
<b>6.4.1 Interworking with public ISDN</b>	<b>6</b>
<b>6.4.2 Interworking with PSTN</b>	<b>6</b>
<b>6.5 Overall SDL</b>	<b>6</b>
<b>7 SS-AOC-D stage 1 specification</b>	<b>8</b>
<b>7.1 Description</b>	<b>8</b>
<b>7.1.1 General description</b>	<b>8</b>
<b>7.1.2 Qualifications on applicability to telecommunication services</b>	<b>8</b>
<b>7.2 Procedures</b>	<b>8</b>
<b>7.2.1 Provision/withdrawal</b>	<b>8</b>
<b>7.2.2 Normal procedures</b>	<b>8</b>
<b>7.2.3 Exceptional procedures</b>	<b>8</b>
<b>7.3 Interactions with other supplementary services and ANFs</b>	<b>9</b>
<b>7.3.1 Advice of charge: charging information at call set-up time (AOC-S)</b>	<b>9</b>
<b>7.3.2 Advice of charge: charging information at the end of the call (AOC-E)</b>	<b>9</b>
<b>7.3.3 Calling Line Identification Presentation (CLIP)</b>	<b>9</b>
<b>7.3.4 Connected Line Identification Presentation (COLP)</b>	<b>9</b>
<b>7.3.5 Calling/Connected Line Identification restriction (CLIR)</b>	<b>9</b>
<b>7.3.6 Calling Name Identification presentation (CNIP)</b>	<b>9</b>
<b>7.3.7 Connected Name Identification Presentation (CONP)</b>	<b>9</b>
<b>7.3.8 Calling/Connected Name Identification restriction (CNIR)</b>	<b>9</b>
<b>7.3.9 Call Diversion (CFU/CFB/CFNR/CD)</b>	<b>9</b>
<b>7.3.10 Call Interception (CINT)</b>	<b>9</b>
<b>7.3.11 Call Intrusion (CI)</b>	<b>9</b>
<b>7.3.12 Call Offer (CO)</b>	<b>9</b>
<b>7.3.13 Call Transfer (CT)</b>	<b>10</b>
<b>7.3.14 Completion of Calls to Busy Subscribers (CCBS)</b>	<b>10</b>
<b>7.3.15 Completion of Calls on No Reply (CCNR)</b>	<b>10</b>
<b>7.3.16 Do Not Disturb (DND)</b>	<b>10</b>
<b>7.3.17 Do Not Disturb Override (DNDO)</b>	<b>10</b>
<b>7.3.18 Path replacement (ANF-PR)</b>	<b>10</b>
<b>7.3.19 Recall (RE)</b>	<b>10</b>
<b>7.4 Interworking considerations</b>	<b>10</b>
<b>7.4.1 Interworking with public ISDN</b>	<b>10</b>
<b>7.4.2 Interworking with PSTN</b>	<b>10</b>
<b>7.5 Overall SDL</b>	<b>10</b>
<b>8 SS-AOC-E stage 1 specification</b>	<b>12</b>
<b>8.1 Description</b>	<b>12</b>
<b>8.1.1 General description</b>	<b>12</b>
<b>8.1.2 Qualifications on applicability to telecommunication services</b>	<b>12</b>
<b>8.2 Procedures</b>	<b>12</b>
<b>8.2.1 Provision/withdrawal</b>	<b>12</b>
<b>8.2.2 Normal procedures</b>	<b>12</b>
<b>8.2.3 Exceptional procedures</b>	<b>12</b>
<b>8.3 Interactions with other supplementary services and ANFs</b>	<b>13</b>
<b>8.3.1 Advice of charge: charging information at call set-up time (AOC-S)</b>	<b>13</b>
<b>8.3.2 Advice of charge: charging information during the call (AOC-D)</b>	<b>13</b>
<b>8.3.3 Calling Line Identification Presentation (CLIP)</b>	<b>13</b>

<b>8.3.4</b> Connected Line Identification Presentation (COLP)	<b>13</b>
<b>8.3.5</b> Calling/Connected Line Identification restriction (CLIR)	<b>13</b>
<b>8.3.6</b> Calling Name Identification presentation (CNIP)	<b>13</b>
<b>8.3.7</b> Connected Name Identification Presentation (CONP)	<b>13</b>
<b>8.3.8</b> Calling/Connected Name Identification restriction (CNIR)	<b>13</b>
<b>8.3.9</b> Call Diversion (CFU/CFB/CFNR/CD)	<b>13</b>
<b>8.3.10</b> Call Interception (CINT)	<b>13</b>
<b>8.3.11</b> Call Intrusion (CI)	<b>13</b>
<b>8.3.12</b> Call Offer (CO)	<b>13</b>
<b>8.3.13</b> Call Transfer (CT)	<b>14</b>
<b>8.3.14</b> Completion of Calls to Busy Subscribers (CCBS)	<b>14</b>
<b>8.3.15</b> Completion of Calls on No Reply (CCNR)	<b>14</b>
<b>8.3.16</b> Do Not Disturb (DND)	<b>14</b>
<b>8.3.17</b> Do Not Disturb Override (DNDO)	<b>14</b>
<b>8.3.18</b> Path replacement (ANF-PR)	<b>14</b>
<b>8.3.19</b> Recall (RE)	<b>14</b>
<b>8.4</b> Interworking considerations	<b>14</b>
<b>8.4.1</b> Interworking with public ISDN	<b>14</b>
<b>8.4.2</b> Interworking with PSTN	<b>14</b>
<b>8.5</b> Overall SDL	<b>15</b>
<b>9</b> SS-AOC stage 2 specification	<b>17</b>
<b>9.1</b> Functional model	<b>17</b>
<b>9.1.1</b> Functional model description	<b>17</b>
<b>9.1.2</b> Description of functional entities	<b>17</b>
<b>9.1.3</b> Relationship of functional model to basic call functional model	<b>18</b>
<b>9.2</b> Information flows	<b>18</b>
<b>9.2.1</b> Definition of information flows	<b>18</b>
<b>9.2.2</b> Relationship of information flows to basic call information flows	<b>27</b>
<b>9.2.3</b> Examples of information flow sequences	<b>28</b>
<b>9.3</b> Functional entity actions	<b>46</b>
<b>9.3.1</b> Functional entity actions of FE1	<b>46</b>
<b>9.3.2</b> Functional entity actions of FE2	<b>46</b>
<b>9.3.3</b> Functional entity actions of FE3	<b>47</b>
<b>9.4</b> Functional entity behaviour	<b>47</b>
<b>9.4.1</b> Behaviour of FE1	<b>47</b>
<b>9.4.2</b> Behaviour of FE2	<b>49</b>
<b>9.4.3</b> Behaviour of FE3	<b>55</b>
<b>9.5</b> Allocation of functional entities to physical equipment	<b>58</b>
<b>Annex A</b> - Structures, contents and application of charging information given by AOC-S	<b>59</b>
<b>Annex B</b> - Structures, contents and application of charging information given by AOC-D	<b>62</b>
<b>Annex C</b> - Structures, contents and application of charging information given by AOC-E	<b>64</b>
<b>Annex D</b> - Charging assumptions for advice of charge in PISNs	<b>66</b>

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 15049 was prepared by ECMA (as ECMA-211) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

Annexes A, B and C form an integral part of this International Standard. Annex D is for information only.

## **Introduction**

This International Standard is one of a series of standards defining services and signalling protocols applicable to Private Integrated Services Networks. The series uses the ISDN concepts as developed by ITU-T (formerly CCITT) and is also within the framework of standards for open systems interconnection as defined by ISO.

This International Standard specifies the Advice of Charge supplementary services.

This International Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC 1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

The services specified are compatible with the equivalent services specified by ITU-T for public ISDNs.

# Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Advice of charge supplementary services

## 1 Scope

This International Standard specifies the Supplementary Services Advice of Charge (SS-AOC), which are applicable to various basic services supported by Private Integrated Services Networks (PISN). Basic services are specified in ISO/IEC 11574.

SS-AOC is a set of supplementary services which enable a user to receive information about the charging of its calls that leave the PISN and enter another network.

AOC-S enables the 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.

AOC-D enables the user to receive information on the recorded charges during the active phase of the call.

AOC-E enables the user to receive information on the recorded charges when the call is terminated.

The provision of charging information to the called user, the provision of charging information for calls that do not leave the PISN, and PISN accounting are outside the scope of this International Standard.

Charging assumptions which apply to the specification of SS-AOC in this International Standard are contained in annex D.

Service specifications are produced in three stages, according the method described in CCITT Rec. I.130. This International Standard contains the stage 1 and stage 2 specifications of SS-AOC. The stage 1 specifications (clauses 6, 7, 8) specify the supplementary services as seen by users of PISNs. The stage 2 specification (clause 9) identifies the functional entities involved in the supplementary services and the information flows between them.

## 2 Conformance

In order to conform to this International Standard, a Stage 3 standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the supplementary services specified in this International Standard. This means that, to claim conformance, a Stage 3 standard is required to be adequate for the support of those aspects of clauses 6, 7 and 8 (stage 1) and clause 9 (stage 2) which are relevant to the interface or equipment to which the Stage 3 standard applies.

## 3 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

- |                        |  |
|------------------------|--|
| ISO/IEC 11574:1994,    | <i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode 64 kbit/s bearer services - Service description, functional capabilities and information flows.</i> |
| ISO/IEC 11579-1:1994,  | <i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Part 1: Reference configuration for PISN Exchanges (PINX).</i>   |
| ISO/IEC 13865:1995,    | <i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Call transfer supplementary service.</i>                 |
| ISO/IEC 13872:1995,    | <i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Call diversion supplementary services.</i>               |
| CCITT Rec. I.112:1988, | <i>Vocabulary of terms for ISDNs.</i>  |

CCITT Rec. I.130:1988, *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN.*

CCITT Rec. I.210:1988, *Principles of telecommunication services supported by an ISDN and the means to describe them.*

CCITT Rec. Z.100:1988, *Specification and description language.*