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ETSI

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Foreword

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

An ETSI standard may be given I-ETS status either because it is regarded as a provisional solution ahead of a more advanced standard, or because it is immature and requires a "trial period". The life of an I-ETS is limited to three years after which it can be converted into an ETS, have it's life extended for a further two years, be replaced by a new version, or be withdrawn.

This I-ETS identifies, in general, the managed objects to be used when performing Customer Administration (CA) on the Operations System to Network Element (OS/NE) interface.

The practical realization of an OS/NE interface based on this I-ETS has to be supported by a profile which specifies and delimits in more detail the application of this I-ETS.

Annex C contains examples on how to apply this I-ETS for customer administration purposes.

Proposed announcement date	
Date of latest announcement of this I-ETS (doa):	30 April 1995

Introduction

For this I-ETS, the following priorities were assigned for the scope of the CA model:

- modelling of analogue, digital and Integrated Services Digital Network (ISDN) subscribers and Private Branch Exchanges (PBXs);

- modelling of the priority 1 ETSI ISDN teleservices, bearer services and supplementary services, including centrex.

Extendibility to cover priority 2 ETSI ISDN teleservices, bearer services and supplementary services, mobile subscribers, ATM, cordless and Universal Personal Telecommunication (UPT) subscribers, packet switching, the full range of CEPT services and non-standardized services (e.g. hunting, etc.) is foreseen via subclassing (see entity-relationship diagram subclause 4.1, and descriptions in subclause 5.1).

For this edition of this I-ETS, the CA model is restricted to modelling of semi-permanent subscriber data. Call processing and dynamic (state) information are currently not covered.

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1 Scope

This Interim European Telecommunication Standard (I-ETS) specifies the management aspects of Customer Administration (CA) for Public Switched Telephone Network (PSTN), and public Integrated Services Digital Network (ISDN), in line with descriptions in ETR 047 [4], and restricted to service provisioning and service configuration only. It covers centrex subscribers and Private Automatic Branch Exchanges (PABX) seen as terminal equipment. It does not cover the PABX extensions.

The model is restricted to the Operations System to Network Element (OS/NE) interface.

Although not included in this edition of this I-ETS, the model has been designed to be extendible for mobile, Asynchronous Transfer Mode (ATM), cordless and Universal Personal Telecommunication (UPT) subscribers.

The ISDN teleservices, bearer services and supplementary services included in this issue of the model have been selected from ETR 010 [2], to test the structure of the model and ensure that it is applicable to all services.

2 Normative references

This I-ETS incorporates, by dated or undated reference, provision 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 I-ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred applies.

[1] ETS 300 050: "Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Service description".

[2] ETR 010 (1991): "ISDN Standards Management (ISM); The ETSI basic guide on the European integrated services digital network".

[3] ETR 046: "Network Aspects (NA); Telecommunications management networks modelling guidelines".

[4] ETR 047: "Network Aspects (NA); Telecommunications Management Network (TMN) Management services".

[5] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

[6] CCITT Recommendation F.200: "Teletex service".

[7] CCITT Recommendation F.184: "Operational provisions for the international public facsimile service between subscriber stations with group 4 facsimile machines (telefax 4)".

[8] CCITT Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

[9] CCITT Recommendation I.230: "Definition of bearer service categories".

[10] CCITT Recommendation I.231: "Circuit-mode bearer service categories".

[11] CCITT Recommendation I.241: "Teleservices supported by an ISDN".

[12] CCITT Recommendation I.254: "Multiparty supplementary services".

[13] CCITT Recommendation M.3100: "Generic network information model".

[14] CCITT Recommendation X.121 (1992): "International numbering plan for public data networks".

[15] CCITT Recommendation X.720 | ISO/IEC 10165-1: "Information technology - Open Systems Interconnection - Structure of management information: Management information model".

[16] CCITT Recommendation X.721 | ISO/IEC 10165-2 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Definition of management information".

[17] CCITT Recommendation X.722 | ISO/IEC 10165-4 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Guidelines for the definition of managed objects".

[18] CCITT Recommendation X.730 | ISO/IEC 10164-1 (1992): "Information technology - Open Systems Interconnection - Systems management: Object management function".

[19] CCITT Recommendation X.731 | ISO/IEC 10164-2 (1992): "Information technology - Open Systems Interconnection - Systems management: State management function".

[20] CCITT Recommendation X.732 | ISO/IEC 10164-3 (1992): "Information technology - Open Systems Interconnection - Systems management: Attributes for representing relationships".

[21] CCITT Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[22] CEPT Handbook on services and facilities offered to the subscribers in telephone system Section I & II: "Services and facilities within the Public Network. 3rd Edition 1981".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this I-ETS, the following definitions apply:

centrex: The functional equivalent of a Private Branch Exchange (PBX) realised in a single local exchange.

centrex console: The centrex equivalent of a PBX attendant.

customer administration: The function of managing customer service provisioning information on a switch.

The following definitions apply to managed classes which are more fully described in clause 5.

access port: The access port object class represents the logical termination point of the customer service access within the switch.

access channel: The access channel object class represents the logical termination of an ISDN B-channel or D-channel or an individual channel of a digital access port.

customer profile: The customer profile object class relates resources used by the customer and contains services provisioned for him.

customized resources: The customized resources object class relates a subset of the customer's services and resources where all services are not applicable to all access ports, access channels and Directory Numbers (DNs).

customized service: The customized service object class and its subclasses are assigned, the characteristics of all the teleservices, bearer services and supplementary services contained in a customer profile.

The definition of all ISDN teleservices, bearer services and supplementary services may be found in the ETSs listed in clause 6 of ETR 010 [2].

3.2 Abbreviations

For the purposes of this I-ETS, the following abbreviations apply:

ASN.1	Abstract Syntax Notation 1
ATM	Asynchronous Transfer Mode
BA	Basic Access
CA	Customer Administration
CD	Changed Destination
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CPE	Customer Premises Equipment
CTP	Connection Termination Point
CUG	Closed User Group
DDI	Direct Dialling In
DN	Directory Number
DTMF	Dual Tone Multi Frequency
ffs	for further study
GDMO	Guidelines for the Definition of Managed Objects
ICB	Incoming Call Barring
ID	Identifier
ISDN	Integrated Services Digital Network
ME	Managed Element
MSN	Multiple Subscriber Number
NE	Network Element
OCB	Outgoing Call Barring
OS	Operations System
PABX	Private Automatic Branch Exchange
PBX	Private Branch Exchange
PRA	Primary Rate Access
PSTN	Public Switched Telephone Network
RDN	Relative Distinguished Name
S	Interface reference point S
T	Interface reference point T
TTP	Trail Termination Point
UPT	Universal Personal Telecommunications

4 Information model diagrams

The following information model diagrams have been drawn for the purpose of clarifying the relations between the different object classes of customer administration. There are three different types of diagrams:

- entity relationship models, showing the relations of the different managed objects;

- inheritance hierarchy, showing how managed objects are derived from each other (i.e. the different paths of inherited characteristics of the different managed objects);

- naming hierarchy showing the derivation of names for managed objects (i.e. the different naming paths for instances of managed objects).

These three different diagrams are only for clarification. The formal specification in terms of Guidelines for the Definition of Managed Objects (GDMO) templates and Abstract Syntax Notation 1 (ASN.1) type definitions are the relevant information for the implementation of this I-ETS.

4.1 Entity-relationship models

The following entity-relationship models have been identified:

- a general overview of the identified models. Black boxes are only place holders for more specific objects specified in the different fragments;

- the ISDN/analogue switching service fragment defines all objects relevant to the CA within an ISDN/analogue environment. For the set of teleservices, bearer services and supplementary services are only place holder boxes drawn;

- the centrex group fragment gives an overview of all identified objects for the centrex service. Black boxes are only place holders for more specific objects specified in the different centrex service fragments;

- the centrex user and console fragments define all objects relevant to the customer administration within a centrex environment. For the set of teleservices, bearer services and supplementary services are only place holder boxes drawn.

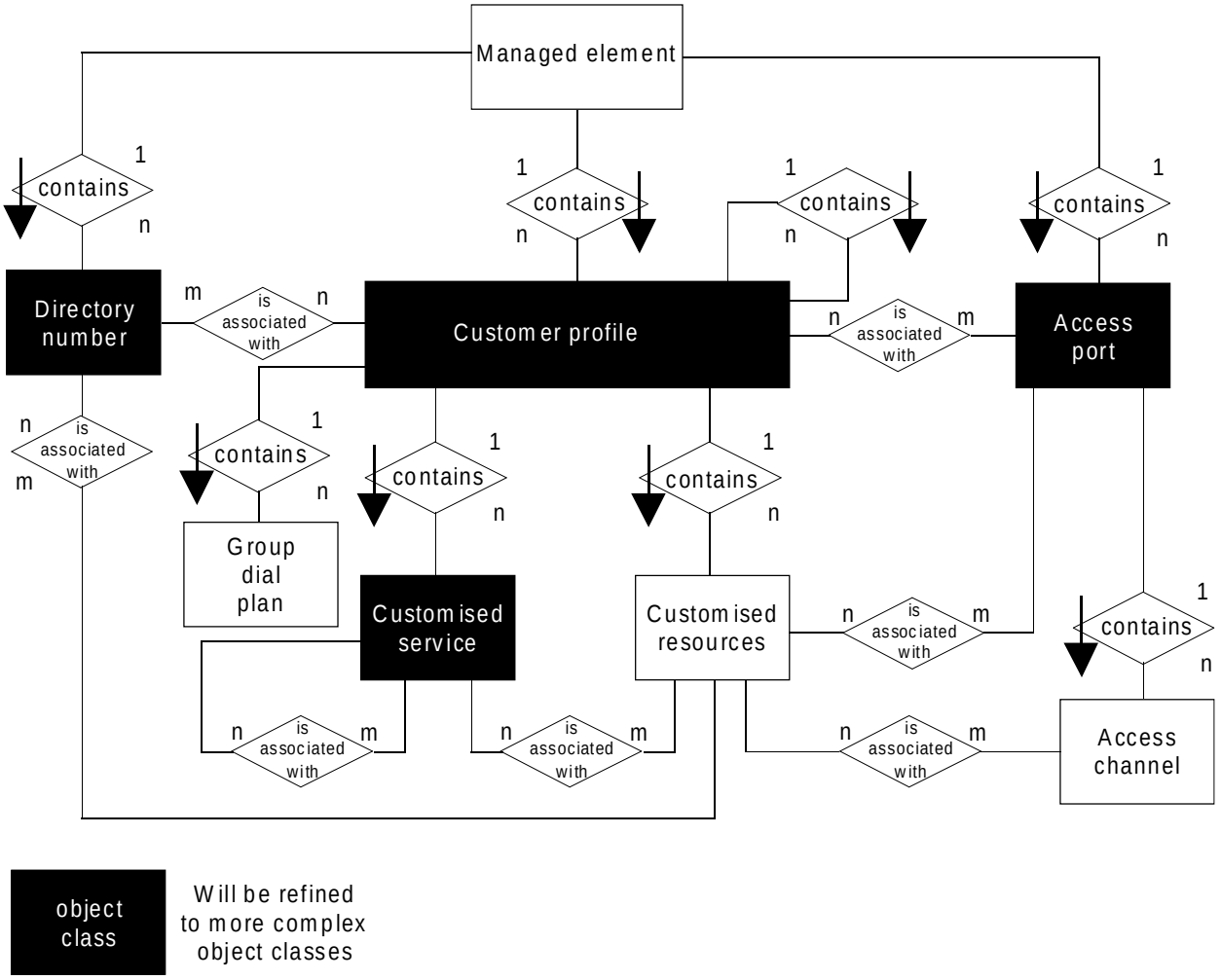
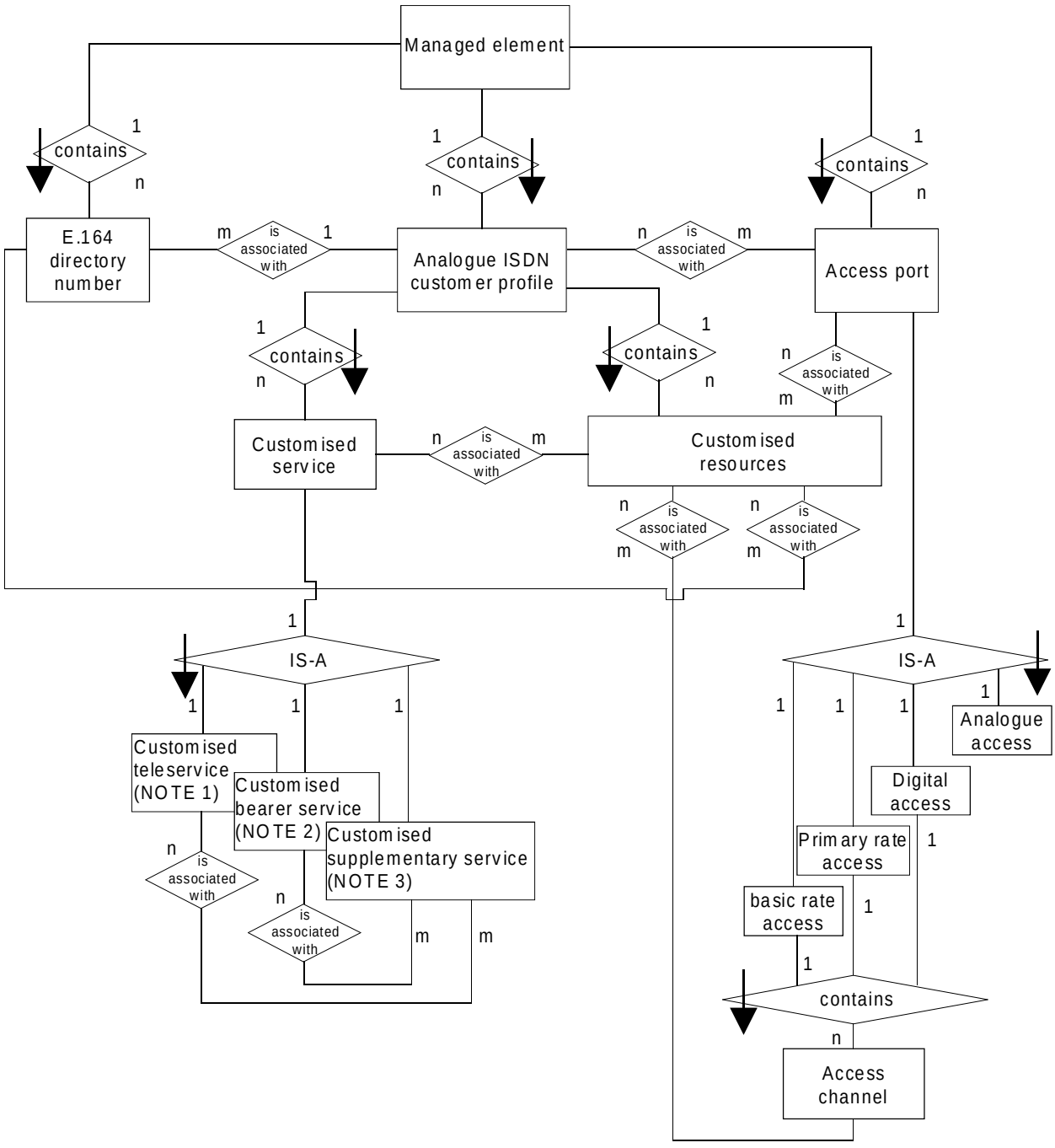


Figure 1: General overview of entity-relationship models

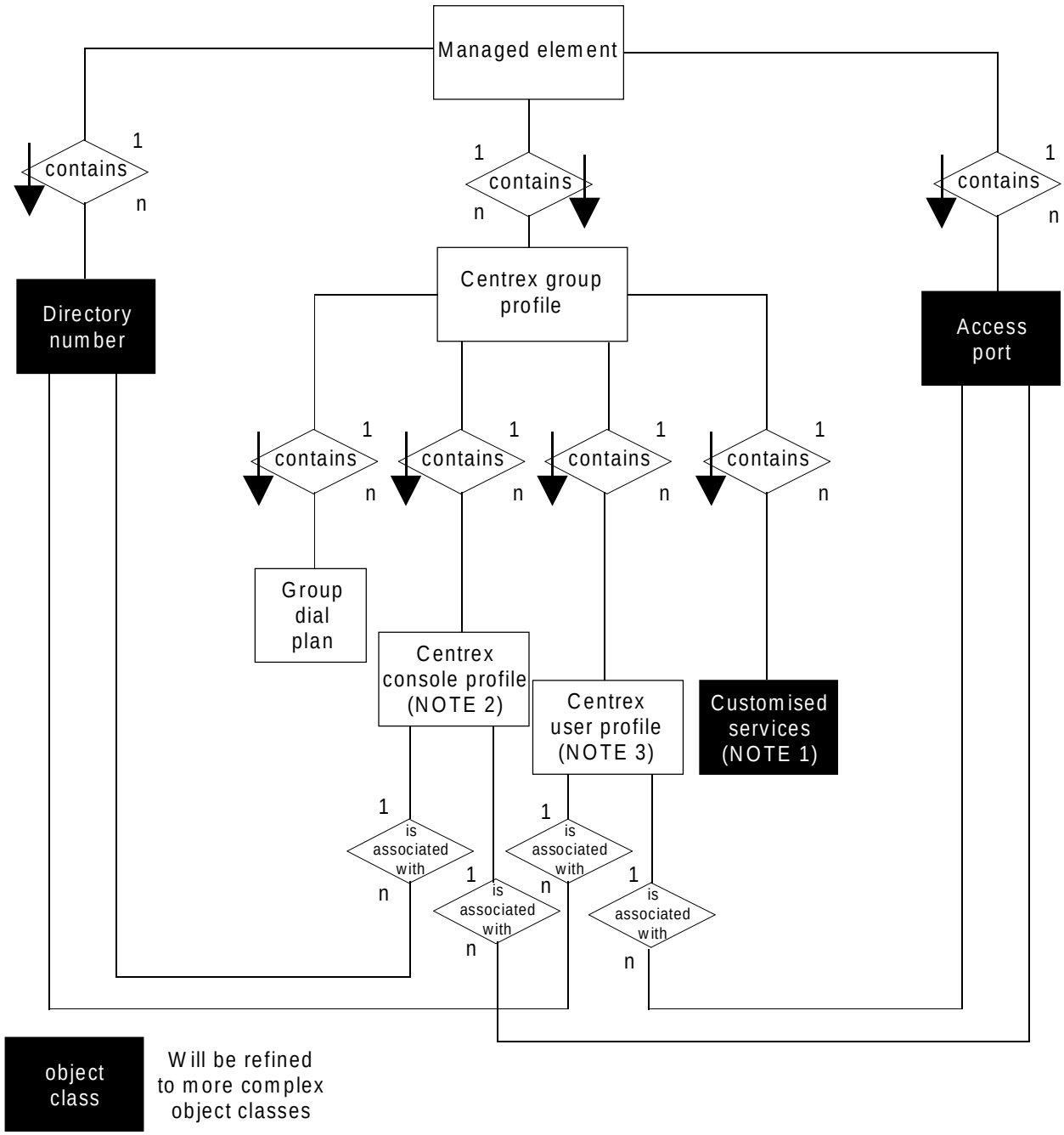


NOTE 1: This is the place holder for the set of teleservices.

NOTE 2: This is the place holder for the set of bearer services.

NOTE 3: This is the place holder for the set of supplementary services.

Figure 2: Analogue ISDN switching fragment

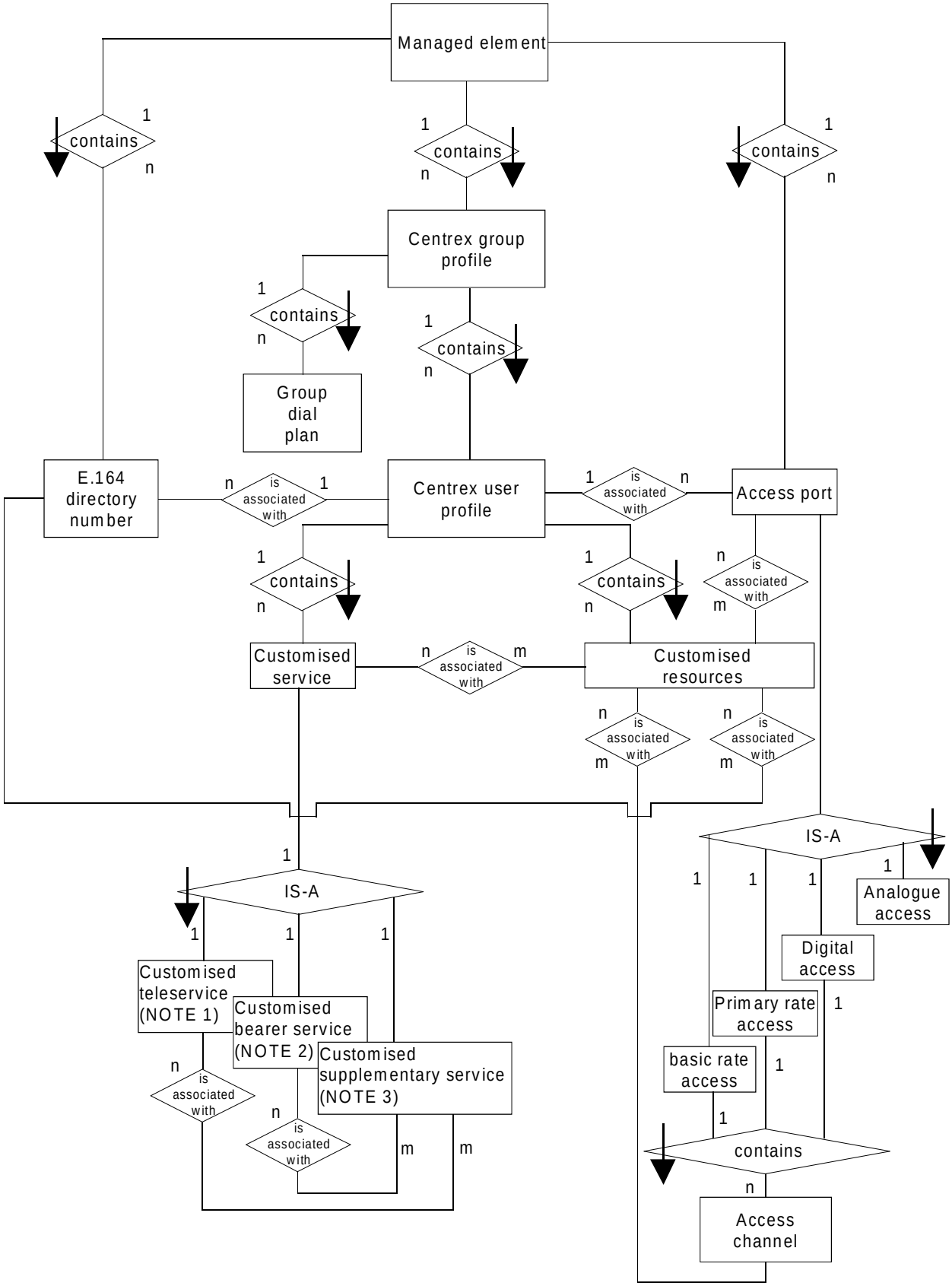


NOTE 1: The set of supplementary services valid for a centrex group.

NOTE 2: See centrex console profile fragment.

NOTE 3: See centrex user profile fragment.

Figure 3: Centrex group profile fragment

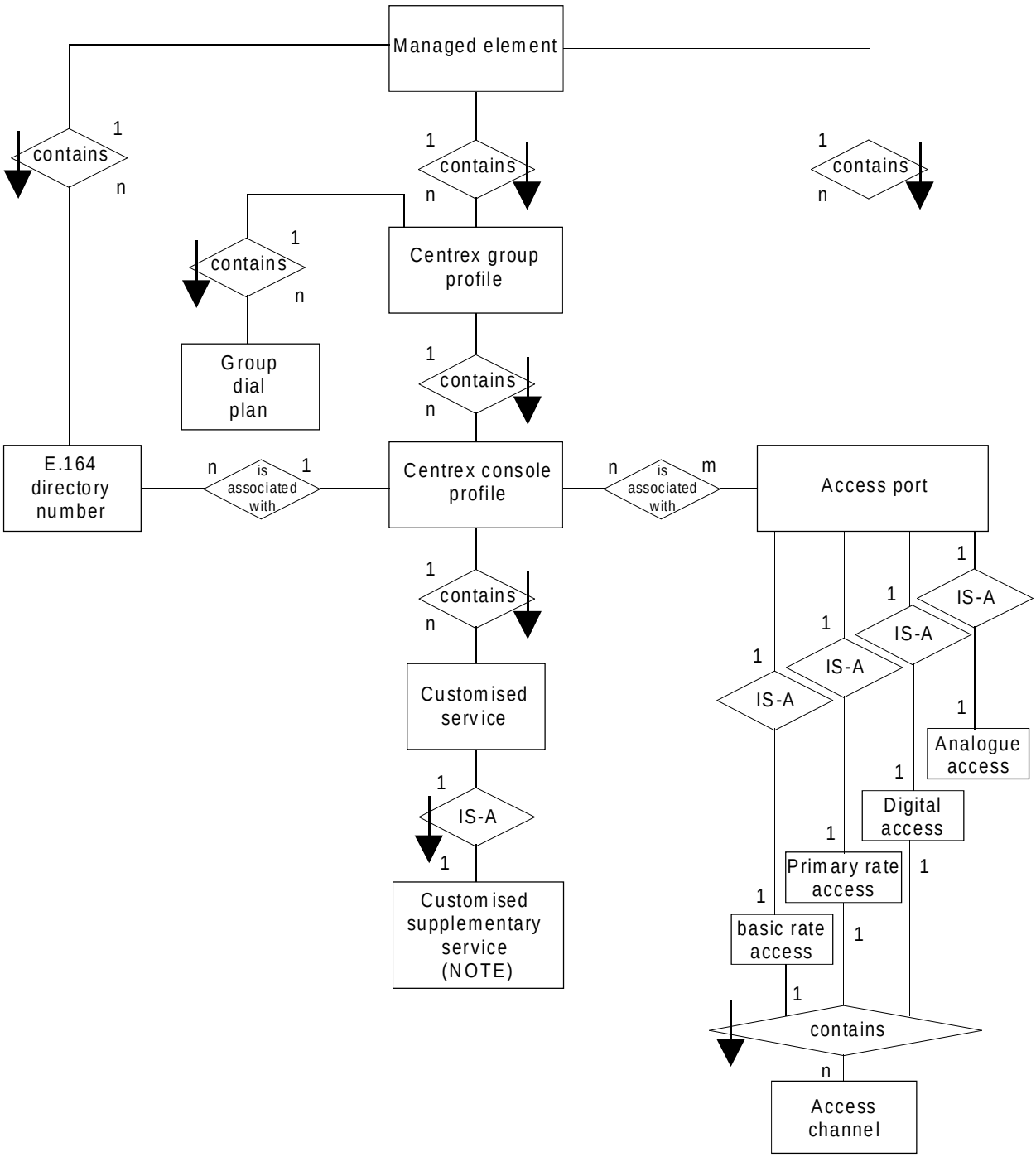


NOTE 1: This is the place holder for the set of teleservices.

NOTE 2: This is the place holder for the set of bearer services.

NOTE 3: This is the place holder for the set of supplementary services.

Figure 4: Centrex user-profile fragment



NOTE: This is the place holder for the set of CENTREX console supplementary services.

Figure 5: Centrex console profile fragment

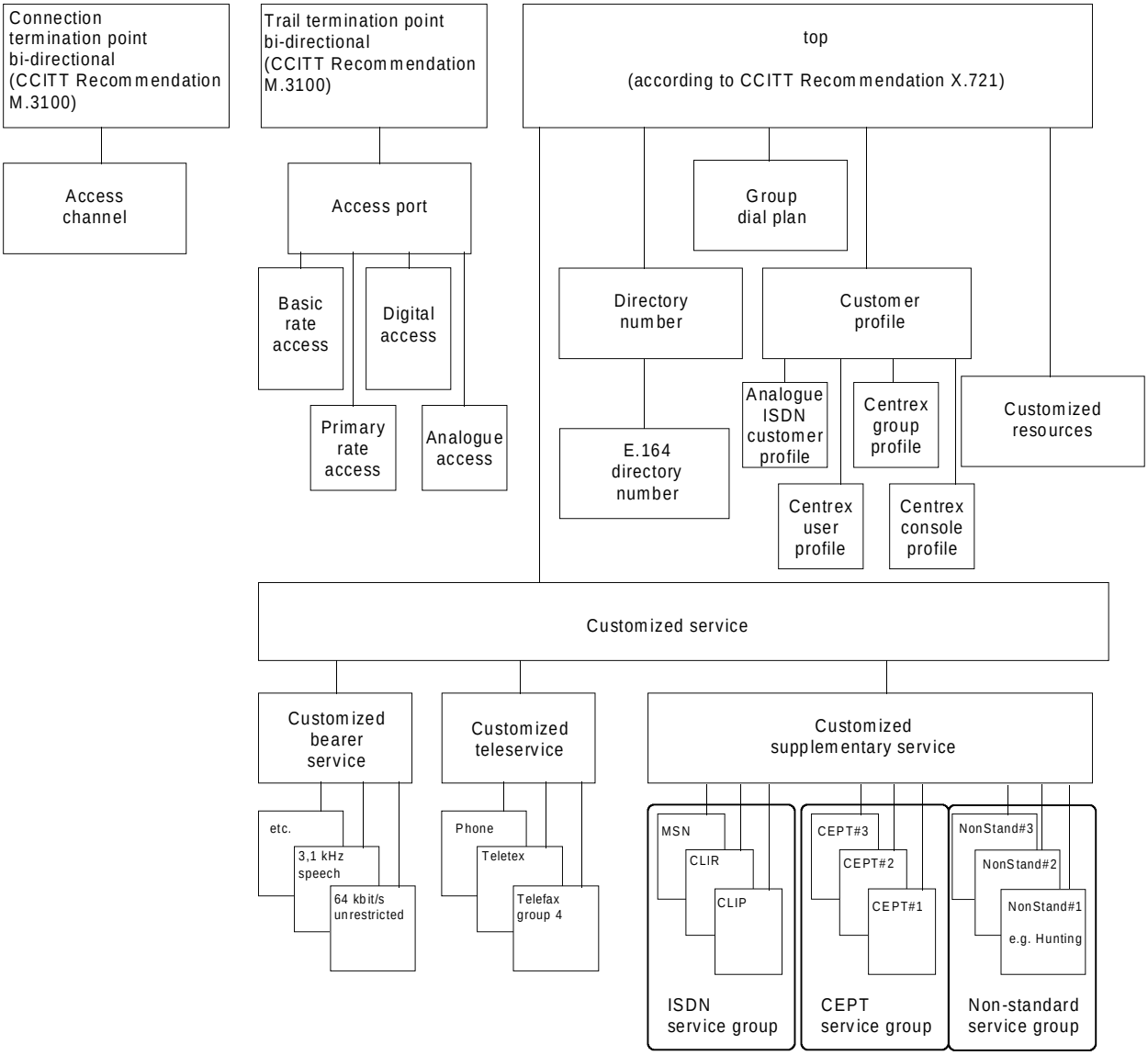
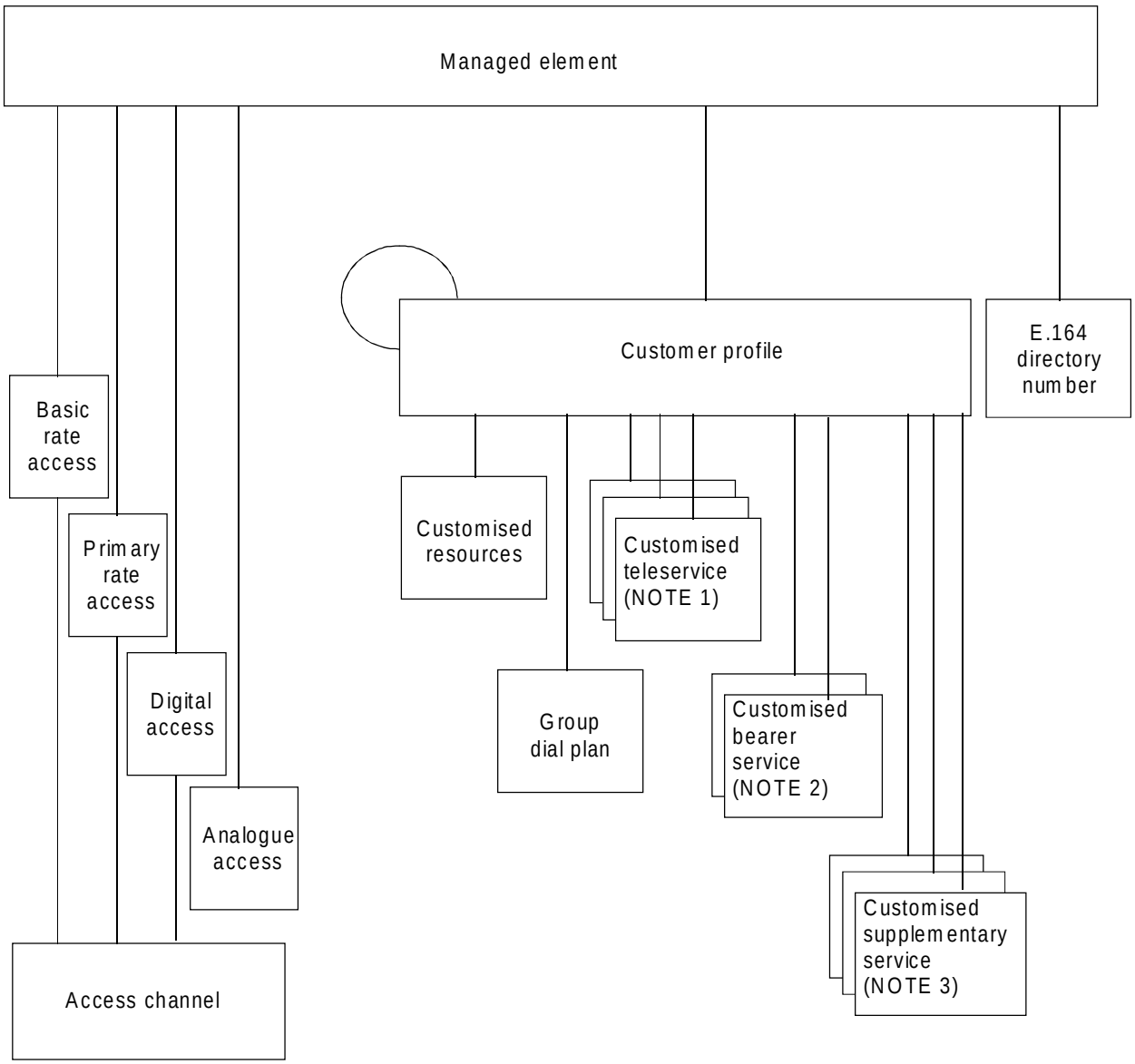


Figure 6: Inheritance hierarchy



NOTE 1: The set of specific teleservices.

NOTE 2: The set of specific bearer services.

NOTE 3: The set of specific supplementary services.

Figure 7: Naming hierarchy

5 Information model description

This clause provides a high-level, informal description of the CA model.

Subclause 5.1 contains a brief description for each object class used in the model covering:

- the purpose of the object class;
- the attributes defined for the object class; and
- the relationship of the object class to other object classes.

Subclause 5.2 contains attributes which are common to several object classes.

Subclause 5.3 contains actions and subclause 5.4 contains the notifications.

5.1 Object class description

Subclause 5.1 is divided into subclauses which describe the objects of the CA-models as they appear in the inheritance diagram in clause 4.

5.1.1 Managed element object class

The Managed Element (ME) object class represents the location where the Q3 interface and its associated resources are provided. This managed object class is adopted from CCITT Recommendation M.3100 [13].

5.1.2 Access port object classes

The following access port object classes are used by CA:

- access port;
- Basic Access (BA);
- Primary Rate Access (PRA);
- digital access;
- analogue access.

5.1.2.1 Access port

The access port object class terminates customer service access within the exchange. This object class is a specialization of the bi-directional Trail Termination Point (TTP) object class as defined in CCITT Recommendation M.3100 [13] and inherits attributes, operations and notifications from there. This object class is specialized to model ISDN BA, ISDN PRA, digital access and analogue access. It identifies the set of attributes which apply in common to all types of access ports and has no instanciations of itself. This object class may be related to a customer profile and its related set of customized resources.

NOTE**:** This object class is not defined within ETSI yet. The CA area is only a user of this object class and can, therefore, only contribute to its definition.

Table 1

Name	Mandatory/Optional	Single/Set	Remarks
Access port identifier	M	single	Relative Distinguished Name (RDN)
Administrative state	M	single	
Operational state	M	single	
Associated owner customized resources	M	set	according to CCITT Recommendation X.732 [20]
Associated owner customer profiles	M	set	according to CCITT Recommendation X.732 [20]
Line test capability	O	single	

The line test capability attribute is there when this access port is equipped with line test facilities.

It can have two values:

1) TRUE: line test is allowed; and

2) FALSE: line test is not allowed.

5.1.2.2 Basic access

The ISDN BA object class consists of up to 2 B-channels of 64 kbit/s for transfer of information and data and 1 D-channel of 16 kbit/s for signalling and data transfer (2 B + D).

Table 2

Name	Mandatory/Optional	Single/Set	Remarks
D-channel layer 1 activation	M	single	
D-channel layer 2 activation	M	single	

The D-channel activation attributes specifies whether layers one and/or two have to be held active.

NOTE**:** This object class is not defined within ETSI yet. The CA area is only an user of this object class and can, therefore, only contribute to its definition.

5.1.2.3 Primary rate access

The ISDN PRA object class consists of up to 30 B-channels of 64 kbit/s for transfer of information and data and 1 D-channel of 64 kbit/s for signalling and data transfer (30 B + D).

Table 3

Name	Mandatory/Optional	Single/Set	Remarks
D-channel layer 2 activation	M	single	
Acting role	O	single	

The D-channel activation attribute specifies whether layer two has to be held active.

The acting role attribute specifies whether this access port is able to play the primary and/or secondary role.

NOTE**:** This object class is not defined within ETSI yet. The CA area is only a user of this object class and can, therefore, only contribute to the definitions.

5.1.2.4 Digital access

The digital access port object class represents the termination of any non-ISDN digital access.

Table 4

Name	Mandatory/Optional	Single/Set	Remarks
no attributes identified			

NOTE: This object class is not defined within ETSI yet. The CA area is only a user of this object class and can, therefore, only contribute to its definition.

5.1.2.5 Analogue access

The analogue access object class is the conventional two-wire loop access to a basic telephone set. Customized teleservices and customized bearer services cannot be assigned to analogue access ports. An analogue access port can be thought of as possessing only one access channel with a bearer capability of speech.

Table 5

Name	Mandatory/Optional	Single/Set	Remarks
Line signalling	M	single	
Line characteristics	M	single	
Third wire equipment	M	single	

The line signalling attribute specifies which signalling the analogue access port uses for the line (e.g. Dual Tone Multi Frequency (DTMF) or pulse dialling).

The line characteristics attribute specifies the transmission characteristics of the analogue line (e.g. attenuation).

The third wire equipment attribute specifies whether the analogue access port supports control of external equipment via a third wire. This attribute specifies the capability of the analogue access port, it does not represent subscription to a service requiring this capability (e.g. private subscriber meter).

NOTE: This object class is not defined within ETSI yet. The CA area is only a user of this object class and can, therefore, only contribute to its definition.

5.1.3 Access channel object class

The access channel object class represents an individual ISDN B-channel or D-channel of an ISDN access port or an individual channel of a digital access port. This object class is a specialization of the bi-directional connection termination point object class defined in CCITT Recommendation M.3100 [13]. It identifies the set of attributes which apply in common to all types of ISDN and digital access channels. Instances of this object class are contained within ISDN or digital access ports.

The number of access channels belonging to an access port depends on the access port architecture. This object class may be related to a set of customized resources when services shall be provisioned on a per access channel basis.

Table 6

Name	Mandatory/Optional	Single/Set	Remarks
Access channel identifier	M	single	RDN
Administrative state	O	single	
Operational state	M	single	
Channel type	M	single	
Channel number	M	single	
Channel rate	M	single	
Associated owner customized resources	M	set	according to CCITT Recommendation X.732 [20]

The channel type attribute specifies for instance ISDN D-channel, non-ISDN channel.

The channel number attribute identifies the channel within the access port (e.g. 1 = first B-channel of an ISDN access).

The channel rate attribute specifies the data transfer rate of the channel (e.g. 64 kbit/s for ISDN B-channel, 16 kbit/s for ISDN basic D-channel).

NOTE: This object class is not defined within ETSI yet. The CA area is only a user of this object class and can, therefore, only contribute to its definition.

5.1.4 Directory number object classes

5.1.4.1 Directory number

The DN object class is a resource in its own right. It is a constituent part of the user interface and is directly related to one or more dialling plans being part of the managed element. DNs may be assigned to an individual customer independently of the access port architecture and subscription service type. A DN object instance may be associated with one or more customer profile object instances. A DN object instance may be associated with several customized resources instances. This association is used to represent the services and ports provisioned for the DN.

The DN has no instanciations of itself.

Table 7

Name	Mandatory/Optional	Single/Set	Remarks
Administrative state	M	single	
Associated owner customer profiles	M	set	according to CCITT Recommendation X.732 [20]
Associated owner customized resources	M	set	according to CCITT Recommendation X.732 [20]

5.1.4.2 CCITT Recommendation E.164 directory number

The CCITT Recommendation E.164 [5] DN represents directory numbers belonging to the ISDN numbering plan defined in CCITT Recommendation E.164 [5].

Table 8

Name	Mandatory/Optional	Single/Set	Remarks
CCITT Recommendation E.164 [5] DN identifier	M	single	RDN
CCITT Recommendation E.164 [5] DN	M	single	according to CCITT Recommendation E.164 [5]
Announcement	M	single	

The announcement attribute specifies the announcement to be provided for an unconnected DN.

The CCITT Recommendation E.164 [5] DN attribute represents the ISDN number according to the ISDN numbering plan defined in CCITT Recommendation E.164 [5]. It is composed of two fields:

- country code (optional);
- national significant number.

  The national significant number is itself composed of two fields:

  - national destination code (optional);
  - subscriber number.

5.1.5 Customer profile object classes

The following customer profile object classes are used by CA:

- customer profile;
- analogue/ISDN customer profile;
- centrex group profile;
- centrex user profile;
- centrex console profile.

5.1.5.1 Customer profile

The customer profile is the single point of reference to a set of resources and services associated with a customer installation. Details of the service provisioning can be found in the customized resources instances contained in the customer profile.

The customer profile may be used to quickly access all data relevant to a given customer installation. The customer profile has no instanciations of itself.

Table 9

Name	Mandatory/Optional	Single/Set	Remarks
Customer profile identifier	M	single	RDN
Administrative state	M	single	according to CCITT Recommendation X.731 [19]

5.1.5.2 Analogue/ISDN customer profile

The analogue/ISDN customer profile provides a single point of reference for a customers installation to one or more ISDN and/or analogue lines. An instance of analogue/ISDN customer profile may be related to at least one instance of access port and/or one instance of CCITT Recommendation E.164 [5] DN.

Table 10

Name	Mandatory/Optional	Single/Set	Remarks
Associated member access ports	M	set	according to CCITT Recommendation X.732 [20]
Associated member CCITT Recommendation E.164 [5] DNs	M	set	according to CCITT Recommendation X.732 [20]
Subscriber type	O	single	
Subscriber category	O	single	

The subscriber type attribute specifies whether the analogue/ISDN customer profile is for a single line or for a multi-line customer.

The subscriber category attribute identifies the subscriber as being for instance:

- a standard subscriber;
- a coin box;
- a mobile subscriber;
- a test equipment;
- an operator, etc.

5.1.5.3 Centrex group profile

The centrex group profile provides the common characteristics for a centrex group. It provides a single point of reference to the services associated with all members of that group. No additional attributes have been identified for this object class.

5.1.5.4 Centrex user profile

The centrex user profile provides the common characteristics for a centrex user. It provides a single point of reference to the resources and services associated with the user.

An instance of centrex user profile may be related to at least one instance of access port and/or one instance of CCITT Recommendation E.164 [5] DN.

Table 11

Name	Mandatory/Optional	Single/Set	Remarks
Associated member access ports	M	set	according to CCITT Recommendation X.732 [20]
Associated member CCITT Recommendation E.164 [5] DNs	M	set	according to CCITT Recommendation X.732 [20]
Associated consoles	O	set	according to CCITT Recommendation X.732 [20]

The associated consoles attribute specifies the range of attendant consoles which may provide call management to/from this centrex user.

5.1.5.5 Centrex console profile

The centrex console profile provides the common characteristics for a centrex console user. It provides a single point of reference to the resources and services associated with the console. An instance of centrex console profile is related to at least one instance of access port and/or one instance of CCITT Recommendation E.164 [5] DN.

Table 12

Name	Mandatory/Optional	Single/Set	Remarks
Associated member access ports	M	set	according to CCITT Recommendation X.732 [20]
Associated member CCITT Recommendation E.164 [5] DNs	M	set	according to CCITT Recommendation X.732 [20]

5.1.6 Customized resources object class

The customized resources object class allows refinement of the service provisioning for a customer. It allows association of a set of services to:

- one or more access ports;
- one or more DNs;
- one or more access channels.

The channels may span more than one access port. The customized resources object class also allows association between DNs and access ports without any services associated with them.

Table 13

Name	Mandatory/Optional	Single/Set	Remarks
Customized resources identifier	M	single	RDN
Administrative state	O	single	
Associated member CCITT Recommendation E.164 [5] DNs	M	set	according to CCITT Recommendation X.732 [20]
Associated member customized services	M	set	according to CCITT Recommendation X.732 [20]
Associated member access ports	M	set	according to CCITT Recommendation X.732 [20]
Associated member access channels	M	set	according to CCITT Recommendation X.732 [20]

The customized resources object class is needed when a service is applicable only to a subset of access ports, access channels or DNs. It is not needed when all the services specified are applicable to all the access ports, access channels and DNs.

5.1.7 Customized service object classes

5.1.7.1 Customized service object class

This object class is assigned a set of characteristics which are common to all customized teleservices, bearer services and supplementary services. It is contained by name binding within the customer profile object class. This object class is not instantiated.

Table 14

Name	Mandatory/Optional	Single/Set	Remarks
Customized service identifier	M	single	RDN
Administrative state	O	single	according to CCITT Recommendation X.731 [19]
Associated owner customized resources	M	set	according to CCITT Recommendation X.732 [20]

5.1.7.2 Customized bearer service

This object class is a specialization of the customized service object class. This object class contains the characteristics common to all customized bearer services as defined in CCITT Recommendation I.210 [8]. A customized bearer service may be associated with a set of supplementary services.

This object class is not instantiated.

Table 15

Name	Mandatory/Optional	Single/Set	Remarks
Associated member supplementary services	M	set	according to CCITT Recommendation X.732 [20]

5.1.7.2.1 Circuit mode 64 kbit/s customized bearer service

This object class is a specialization of the customized bearer service object class and defines the "64 kbit/s unrestricted" customized bearer service according to CCITT Recommendation I.231 [10], § 1.

Table 16

Name	Mandatory/Optional	Single/Set	Remarks
Maximum number of information channels.	M	single	according to CCITT Recommendation I.210 [8]
Maximum number of total calls	M	single	according to CCITT Recommendation I.210 [8]

5.1.7.2.2 Circuit mode 3,1 kHz audio customized bearer service

This object class is a specialization of the customized bearer service object class and defines the "3,1 kHz audio" customized bearer service according to CCITT Recommendation I.231 [10], § 2.

Table 17

Name	Mandatory/Optional	Single/Set	Remarks
Maximum number of information channels	M	single	
Maximum number of total calls	M	single	

5.1.7.3 Customized teleservice

This object class is a specialization of the customized service object class. It contains the characteristics common to all customized teleservices as defined in CCITT Recommendation I.210 [8]. A customized teleservice may or may not be associated with a set of supplementary services.

This object class is not instantiated.

Table 18

Name	Mandatory/Optional	Single/Set	Remarks
Associated member supplementary services	M	set	according to CCITT Recommendation X.732 [20]

5.1.7.3.1 Teletex teleservice

This object class is a specialization of the customized teleservice object class and defines the teletex teleservice according to CCITT Recommendation I.241 [11], § 2.

Table 19

Name	Mandatory/Optional	Single/Set	Remarks
Teletex mode	M	single	

5.1.7.3.2 Telefax group 4 teleservice

This object class is a specialization of the customized teleservice object class and defines the telefax group 4 teleservice according to CCITT Recommendation I.241 [11], § 3.

Table 20

Name	Mandatory/Optional	Single/Set	Remarks
Telefax class	M	single	

5.1.7.3.3 Telephony 3,1 kHz teleservice object class

This object class is a specialization of the customized teleservice object class and defines the telephony 3,1 kHz teleservice according to CCITT Recommendation I.241 [11].

Table 21

Name	Mandatory/Optional	Single/Set	Remarks
Maximum number of information channels	M	single	
Maximum number of total calls	M	single	

5.1.7.4 Customized supplementary service object class

This object class is a specialization of the customized service object class. It represents the supplementary services providing additional capabilities to be used with a basic telecommunication service. It may represent:

- an ISDN supplementary service as defined in ETSI;
- a CEPT supplementary service as defined in the CEPT Handbook [22];
- a non-standard supplementary service, i.e. operator-specific service.

A customized supplementary service may be associated with a set of bearer and/or teleservices thereby supplementing these services.

This object class is not instantiated.

Table 22

Name	Mandatory/Optional	Single/Set	Remarks
Associated owner customized services	M	set	according to CCITT Recommendation X.732 [20]

5.1.7.4.1 Calling line identification presentation supplementary service

This supplementary service provides the called party with the possibility of receiving identification of the calling party. In addition to the ISDN number, the calling line identity may include a subaddress generated by the calling user and transparently transported by the network. The network will deliver the calling line identity to the called party during call establishment, regardless of the terminal capability to handle the information.

Table 23

Name	Mandatory/Optional	Single/Set	Remarks
no attributes identified			

5.1.7.4.2 Calling line identification restriction supplementary service

This supplementary service provides the calling party with the possibility to prevent presentation of the calling party's ISDN number, and subaddress information (if any) to the called party. If the called party subscribes to the calling line identification presentation supplementary service then the called party receives an indication that the calling party information is not available due to restriction.

Table 24

Name	Mandatory/Optional	Single/Set	Remarks
CallIdRestrictionOptions	M	single	

5.1.7.4.3 Direct dialling in supplementary service

The direct dialling in supplementary service enables a user to call directly via a public ISDN a user on a private ISDN by use of the public ISDN numbering plan.

Table 25

Name	Mandatory/Optional	Single/Set	Remarks
NumOfDigitsNotToTransmit	M	single	

5.1.7.4.4 Multiple subscriber number supplementary service

According to ETS 300 050 [1], the MSN supplementary service provides the possibility for assigning multiple numbers (not necessarily consecutive) to a single public or private interface. This enables the selection of one or more multiple distinct terminals attached to the same interface.

The service provider shall fix the length of the numbers to be transmitted to the user's installation. They may comprise from the least significant digit up to the full ISDN number (see CCITT Recommendation E.164 [5]). The digit(s) significant for terminal differentiation shall be an integral part of the ISDN numbering scheme.

NOTE 1: Within a private ISDN, multiple subscriber number digits may be different from the digits of the public ISDN number. This additional possibility, if provided, has no impact on the public ISDN.

NOTE 2: More than one multiple subscriber number may be assigned to one terminal.

NOTE 3: The actual method of relating the ISDN number to a particular terminal is a matter of national implementation.

Table 26

Name	Mandatory/Optional	Single/Set	Remarks
Associated default DN	M	single	
Screen originating DN	M	single	
Number of digits for callId	M	single	

5.1.7.4.5 Terminal portability supplementary service

This supplementary service allows a user engaged in an active call to adjourn communication by an appropriate signalling procedure and resume the call at a later time.

Table 27

Name	Mandatory/Optional	Single/Set	Remarks
no attributes identified			

5.1.7.4.6 Advice of charge: charging information during the call supplementary service

This supplementary service provides the served user with cumulative charging information during the call. The information can be sent for all calls, or on a per call basis. The charge information given relates to the charges incurred on the network to which the served user is attached.

Table 28

Name	Mandatory/Optional	Single/Set	Remarks
Advice of charge: charging information during the call supplementary service activation	M	single	

5.1.7.4.7 Advice of charge: charging information at the end of the call supplementary service

This 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 relates to the charges incurred on the network to which the served user is attached.

Table 29

Name	Mandatory/Optional	Single/Set	Remarks
Advice of charge: charging information at the end of the call supplementary service activation	M	single	

5.1.7.4.8 Advice of charge: charging information at call set-up time supplementary service

This 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.

Table 30

Name	Mandatory/Optional	Single/Set	Remarks
Advice of charge: charging information at call set-up time supplementary service activation	M	single	

5.1.7.4.9 Call hold supplementary service

This supplementary service allows a user to interrupt communications on an existing call and then subsequently, if desired, re-establish communications.

Table 31

Name	Mandatory/Optional	Single/Set	Remarks
no attributes identified			

5.1.7.4.10 Call waiting supplementary service

This supplementary service permits a user to be informed of an incoming call with an indication when all access to the user is busy. The user then has the choice of accepting, rejecting, or ignoring the waiting call.

Table 32

Name	Mandatory/Optional	Single/Set	Remarks
Call waiting calling notification	M	single	
Maximum number of waiting calls	M	single	

5.1.7.4.11 Three party supplementary service

This supplementary service enables a user to establish a three-way conversation, i.e. a simultaneous communication between the user and two other parties.

Table 33

Name	Mandatory/Optional	Single/Set	Remarks
no attributes identified			

5.1.7.4.12 Completion of calls to busy subscriber supplementary service

This supplementary service enables a calling user, encountering a busy destination, to have the call completed when the busy destination becomes not busy, without having to make a new call attempt.

Table 34

Name	Mandatory/Optional	Single/Set	Remarks
Call completion busy recall mode	M	single	

5.1.7.4.13 Call forwarding busy supplementary service

This supplementary service permits a served user to have the network send all incoming calls, which meet busy and are addressed to the served user's number, to another number. The served user's originating service is unaffected.

Table 35

Name	Mandatory/Optional	Single/Set	Remarks
Directory number	M	single	
Call forwarding busy active notification	M	single	
Call forwarding busy calling notification	M	single	
Call forwarding busy release notification	M	single	
Call forwarding busy served notification	M	single	

5.1.7.4.14 Call forwarding no reply supplementary service

This supplementary service permits a served user to have the network send all incoming calls, which meet no reply and are addressed to the served user's number, to another number. The served user's originating service is unaffected.

Table 36

Name	Mandatory/Optional	Single/Set	Remarks
Directory number	M	single	
Call forwarding no reply active notification	M	single	
Call forwarding no reply calling notification	M	single	
Call forwarding no reply release notification	M	single	
Call forwarding no reply served notification	M	single	

5.1.7.4.15 Call forwarding unconditional supplementary service

This supplementary service permits a served user to have the network send all incoming calls addressed to the served user's number, to another number. The served user's originating service is unaffected. If this service is activated, calls are forwarded no matter what the condition of the termination.

Table 37

Name	Mandatory/Optional	Single/Set	Remarks
Directory number	M	single	
Call forwarding unconditional active notification	M	single	
Call forwarding unconditional calling notification	M	single	
Call forwarding unconditional release notification	M	single	
Call forwarding unconditional served notification	M	single	

5.1.7.4.16 Closed user group supplementary service

This supplementary service is used to store the closed user group general subscription options specified by CCITT.

Referenced associated services (defined in the attribute "associated owner customized services") shall exist prior to referencing. Referenced associated services cannot be deleted.

Table 38

Name	Mandatory/Optional	Single/Set	Remarks
Closed user group index	M	set	
Closed user group interlock code	M	set	
Closed user group data network identification	M	set	
Closed user group barring	M	set	

5.1.7.4.17 Closed user group supplementary service subscription option

This object may only be instantiated if either the attribute preferredCugId is assigned a non-NULL value, or the attribute "closed user group network authorisations" is not empty.

This object can be instantiated to store either service independent (general subscription) options or service dependent subscription (per service) options.

For the service dependent subscription options (denoted by associated owner customized services not equal to the empty set):

- the service dependent subscription options override any service independent subscription options which are assigned for the given CCITT Recommendation E.164 [5] DN.

For the service independent subscription options (denoted by associated owner customized services equal to empty set):

- the service independent subscription options are valid for all teleservices and bearer services which subscribe the closed user group feature and for which no service dependent subscription options are defined.

Table 39

Name	Mandatory/Optional	Single/Set	Remarks
Preferred closed user group identifier	M	single	
Closed user group network authorisations	M	single	

5.1.8 Group dial plan

The group dial plan object class represents the treatment of dialled digits on the terminating equipment of centrex users, within a specific centrex group.

Table 40

Name	Mandatory/Optional	Single/Set	Remarks
Group dial plan identifier	M	single	RDN
Dialled codes list	M	set	
Translation table	M	set	

The dialled codes list attribute defines the range of dialled digits which will undergo specific treatments within this centrex group.

The translation table attribute defines how calls are routed between extensions in the centrex group, i.e. the correspondence between the dialled digits and the PSTN numbers.

5.2 Definition of attributes

This subclause provides the description of all generic attributes used within the CA model. The following generic attributes have been identified and their definition can be found within the appropriate documents mentioned in the text:

- relative distinguished name;
- state attribute;
- relationship attributes.

The attributes specific to the CA model are already explained by the object class descriptions.

5.2.1 Relative distinguished name

The semantics of the relative distinguished name attribute type are specified in CCITT Recommendation X.720 [15]. This attribute type is used to identify an instance of a managed object uniquely within the scope of its immediate superior in the management information tree. This is modelled as a single-valued attribute type.

Table 41

Value type	Identifier, graphic string or integer.
Inherent properties	The value shall be unique within the scope of superior managed object instance.
Permitted operations	Get only.
Implicit relations	The object instance is contained in the superior managed object instance.
Specification properties	This attribute type may be used for naming in the following object classes: managed element; access port; access channel; CCITT Recommendation E.164 [5] directory number; customer profile; customized resources; customized service; and group dial plan.

5.2.2 State attributes

State related attributes of managed objects for customer administration conform to the generic state model as defined by CCITT Recommendation X.731 [19].

5.2.2.1 Operational state

The semantics of the operational state attribute are specified in CCITT Recommendation X.731 [19].

The syntax of the operational state attribute are specified in CCITT Recommendation X.721 [16].

5.2.2.2 Administrative state

The semantics of the administrative state attribute are specified in CCITT Recommendation X.731 [19].

The syntax of the administrative state attribute are specified in CCITT Recommendation X.721 [16].

5.2.3 Relationship attributes

Relationship attributes of managed objects for customer administration conform to the generic relationship model as defined by CCITT Recommendation X.732 [20]. In general the group relationship is utilized.

5.2.3.1 Owner object classes

5.2.3.1.1 Customer profile

The following explicit relationships have been identified for this object class:

- the owner object class is customer profile with:
  - associated CCITT Recommendation E.164 [5] DN;
  - associated access ports.

The member object classes are DN and access port with the associated customer profiles attribute pointing to the set of owners.

5.2.3.1.2 Customized resources

The following explicit relationships have been identified within this object class:

- the owner is the customized resources object class with the attributes:
  - associated CCITT Recommendation E.164 [5] DN;
  - associated access ports;
  - associated access channels;
  - associated customized services;
- the member object classes are CCITT Recommendation E.164 [5] DN, access port, access channel and customized service with the attribute:
  - associated customized resources;

  pointing to the set of owners.

5.2.3.1.3 Customized services

The following two explicit relationships have been identified within this object class:

a) customized teleservice or customized bearer service with customized supplementary service:

   1) the owner object class is the customized teleservice or the customized bearer service with the attribute:
      - associated supplementary services;
   2) the member object class is the customized supplementary service with the attribute:
      - associated customized services;

      pointing to the set of owners.

b) customized service with customized resources:

   1) the owner object class is customized resources with the attribute:
      - associated customized services;
   2) the member object class is customized service with the attribute:
      - associated customized resources,

      pointing to the set of owners.

5.2.3.2 Association attributes

5.2.3.2.1 Associated DN

Table 42

Value type	Set-valued, set-element is objectInstance.
Permitted operations	Get, set.
Implicit relations	A DN cannot be deleted if referenced.
Specification properties	This attribute is applied to customer profile and customized resources object class and represents the owner role for this association.
Attribute name	Associated member CCITT Recommendation E.164 [5] DNs.

5.2.3.2.2 Associated access ports

Table 43

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set elements represent all access ports connected with this object class instance.
Permitted operations	Get, set.
Implicit relations	An access port cannot be deleted if referenced.
Specification properties	This attribute is applied to customer profile and customized resources object classes and represents the owner role for this association.
Attribute name	Associated member access ports.

5.2.3.2.3 Associated access channels

Table 44

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set elements represent all access channels connected with this object class instance.
Permitted operations	Get, set.
Implicit relations	An access port cannot be deleted if referenced.
Specification properties	This attribute is applied to the customized resources object class and represents the owner role for this association.
Attribute name	Associated member access channels.

5.2.3.2.4 Associated customer profile

Table 45

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set element represents the association with a specific customer profile.
Permitted operations	Get, set.
Implicit relations	When a customer profile instance is deleted then the related item of the set has also be deleted. When the last customer profile instance is deleted then the attribute gets the NULL value representing that no further relationship is there.
Specification properties	This attribute is applied to CCITT Recommendation E.164 [5] DN and access port object class and represents the member role for this association.
Attribute name	Associated owner customer profile.

5.2.3.2.5 Associated customized resources

Table 46

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set-elements represent the association between customized services, CCITT Recommendation E.164 [5] DNs and access ports and/or access channels.
Permitted operations	Get, set.
Implicit relations	When an associated customized resources instance is deleted then the related item of the set has also be deleted. When the last customized resources instance is deleted then the attribute gets the NULL value representing that no further relationship is there.
Specification properties	This attribute may be applied to customized service, CCITT Recommendation E.164 [5] DN, access port and access channel object classes and represents the member role of this relationship.
Attribute name	Associated owner customized resources.

5.2.3.2.6 Associated customized services

This set-valued attribute points to all instances of customized teleservices and/or customized bearer service which are supplemented by this instance of supplementary service.

Table 47

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set elements represent the association between teleservices and/or bearer services and supplementary services.
Permitted operations	Get, set.
Implicit relations	When an associated customized teleservice and/or customized bearer service instance is deleted then the related item of the set has also be deleted. When the last customized teleservice and/or customized bearer service instance is deleted then the attribute gets the NULL value representing that no further relationship is there. It represents the member role of this relationship.
Specification properties	This attribute may be applied to the customized supplementary service object class.
Attribute name	Associated owner customized services.

5.2.3.2.7 Associated customized supplementary services

This set-valued attribute points to all instances of customized supplementary service object class which supplement this instance of customized teleservice or customized bearer service.

Table 48

Value type	Set-valued, set-element is objectInstance.
Inherent properties	The set elements represent the association between teleservice and/or bearer services and supplementary services.
Permitted operations	Get, set.
Implicit relations	When an associated customized supplementary service instance is deleted then the related item of the set has also be deleted. When the last customized supplementary service instance is deleted then the attribute gets the NULL value representing that no further relationship is there. It represents the owner role of this relationship.
Specification properties	This attribute may be applied to the customized teleservices or bearer service object class.
Attribute name	Associated member supplementary services.

5.3 Actions description

No specific actions have been identified for the CA.

5.4 Notifications description

The following generic notifications will be utilized by the CA:

- object creation according to CCITT Recommendations X.721 [16] and X.730 [18];
- object deletion according to CCITT Recommendations X.721 [16] and X.730 [18];
- attribute value change according to CCITT Recommendations X.721 [16] and X.730 [18];
- state change according to CCITT Recommendations X.721 [16] and X.731 [19];
- relationship change according to CCITT Recommendations X.721 [16] and X.732 [20].

6 Formal definitions

6.1 Definition of managed object classes

6.1.1 Access channel

```
accessChannel MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointBidirectional;
    CHARACTERIZED BY
        accessChannelPkg PACKAGE
            BEHAVIOUR
                accessChannelCommonBhv,
                accessChannelCreateBhv,
                accessChannelDeleteBhv,
                accessChannelStateBhv,
                accessChannelRelationBhv,
                accessChannelForCustomerAdminBhv;
            ATTRIBUTES
                assocOwnerCustomizedResources   DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocOwnerCustRes
                                                GET-REPLACE ADD-REMOVE,
                channelType                     GET-REPLACE,
                channelRate                     GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        adminStatePkg
            PRESENT IF "required";
REGISTERED AS {managedObjectClass 1};
```

6.1.2 Access port

```
accessPort MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation M.3100:1992":trailTerminationPointBidirectional;
    CHARACTERIZED BY
        accessPortPkg PACKAGE
            BEHAVIOUR
                accessPortCommonBhv,
                accessPortStateBhv,
                accessPortRelationsBhv;
            ATTRIBUTES
                assocOwnerCustomizedResources   DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocOwnerCustRes
                                                GET-REPLACE ADD-REMOVE,
                assocOwnerCustomerProfiles      DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocOwnerCustProf
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        lineTestCapabilityPkg
            PRESENT IF "an access port is equipped with line test facilities";
REGISTERED AS {managedObjectClass 2};
```

6.1.3 Advice of charge: charging information during the call

```
adviceOfChargeDuring MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        adviceOfChargeDuringPackage PACKAGE
            BEHAVIOUR
                adviceOfChargeDuringCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                adviceOfChargeActivation        GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 3};
```

6.1.4 Advice of charge: charging information at the end of the call

```
adviceOfChargeEnd MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        adviceOfChargeEndPackage PACKAGE
            BEHAVIOUR
                adviceOfChargeEndCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                adviceOfChargeActivation        GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 4};
```

6.1.5 Advice of charge: charging information at call set-up time

```
adviceOfChargeSetup MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        adviceOfChargeSetupPackage PACKAGE
            BEHAVIOUR
                adviceOfChargeSetupCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                adviceOfChargeActivation        GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
    REGISTERED AS {managedObjectClass 5};
```

6.1.6 Analogue access

```
analogueAccess MANAGED OBJECT CLASS
    DERIVED FROM accessPort;
    CHARACTERIZED BY
        analogueAccessPkg PACKAGE
            BEHAVIOUR
                analogueAccessCommonBhv,
                analogueAccessDeleteBhv,
                analogueAccessForCustomerAdminBhv;
            ATTRIBUTES
                lineSignalling                  DEFAULT VALUE
                                                CustomerAdminModule.lineSignallingDefault
                                                GET-REPLACE,
                lineCharacteristics             DEFAULT VALUE
                                                CustomerAdminModule.lineCharacteristicsDefault
                                                GET-REPLACE,
                thirdWireEquipment              DEFAULT VALUE
                                                CustomerAdminModule.thirdWireEquipmentDefault
                                                GET-REPLACE;;;
REGISTERED AS {managedObjectClass 6};
```

6.1.7 Analogue ISDN customer profile

```
analogueISDNCustomerProfile MANAGED OBJECT CLASS
    DERIVED FROM customerProfile;
    CHARACTERIZED BY
        analogueISDNCustomerProfilePackage PACKAGE
            BEHAVIOUR
                customerProfileCreateBhv,
                customerProfileDeleteBhv,
                analogueISDNProfileCommonBhv,
                analogueISDNProfileRelationsBhv;
            ATTRIBUTES
                assocMemberAccessPorts          DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE,
                assocMemberE164DirectoryNumbers DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        subscriberCharacteristicsPkg
            PRESENT IF "required";
REGISTERED AS {managedObjectClass 7};
```

6.1.8 Basic access

```
basicAccess MANAGED OBJECT CLASS
    DERIVED FROM accessPort;
    CHARACTERIZED BY
        basicAccessPkg PACKAGE
            BEHAVIOUR
                basicAccessCommonBhv,
                basicAccessDeleteBhv,
                basicAccessForCustomerAdminBhv;
            ATTRIBUTES
                dChannelLayer1Activation        DEFAULT VALUE
                                                CustomerAdminModule.d-ChannelActivationDefault
                                                GET-REPLACE,
                dChannelLayer2Activation        DEFAULT VALUE
                                                CustomerAdminModule.d-ChannelActivationDefault
                                                GET-REPLACE;;;
REGISTERED AS {managedObjectClass 8};
```

6.1.9 Completion of calls to busy subscribers

```
callCompletionBusy MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callCompletionBusyPackage PACKAGE
            BEHAVIOUR
                callCompletionBusyCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                callCompletionBusyRecallMode    GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 9};
```

6.1.10 Call forwarding busy

```
callForwardBusy MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callForwardBusyPackagePACKAGE
            BEHAVIOUR
                callForwardBusyCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                e164DirectoryNumber             GET-REPLACE,
                callForwardActiveNotification   GET-REPLACE,
                callForwardCallingNotification  GET-REPLACE,
                callForwardReleaseNotification  GET-REPLACE,
                callForwardServedNotification   GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 10};
```

6.1.11 Call forwarding, no reply

```
callForwardNoReply MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callForwardNoReplyPackage PACKAGE
            BEHAVIOUR
                callForwardNoReplyCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                e164DirectoryNumber             GET-REPLACE,
                callForwardActiveNotification   GET-REPLACE,
                callForwardCallingNotification  GET-REPLACE,
                callForwardReleaseNotification  GET-REPLACE,
                callForwardServedNotification   GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 11};
```

6.1.12 Call forwarding unconditional

```
callForwardUnc MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callForwardUncPackage PACKAGE
            BEHAVIOUR
                callForwardUncCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                e164DirectoryNumber             GET-REPLACE,
                callForwardActiveNotification   GET-REPLACE,
                callForwardCallingNotification  GET-REPLACE,
                callForwardReleaseNotification  GET-REPLACE,
                callForwardServedNotification   GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 12};
```

6.1.13 Call hold

```
callHold MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callHoldPackage PACKAGE
            BEHAVIOUR
                callHoldCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;;;
REGISTERED AS {managedObjectClass 13};
```

6.1.14 Call waiting

```
callWaiting MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        callWaitingPackage PACKAGE
            BEHAVIOUR
                callWaitingCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                callWaitingCallingNotification  GET-REPLACE,
                maxNumberOfWaitingCalls         GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS{managedObjectClass 14};
```

6.1.15 Centrex console profile

```
centrexConsoleProfile MANAGED OBJECT CLASS
    DERIVED FROM customerProfile;
    CHARACTERIZED BY
        centrexConsoleProfilePackage PACKAGE
            BEHAVIOUR
                centrexConsoleProfileCommonBhv,
                customerProfileCreateBhv,
                customerProfileDeleteBhv,
                centrexConsoleProfileDeleteBhv,
                analogueISDNProfileRelationsBhv;
            ATTRIBUTES
                assocMemberAccessPorts          DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE,
                assocMemberE164DirectoryNumbers DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":relationshipChange;;;
REGISTERED AS {managedObjectClass 15};
```

6.1.16 Centrex group profile

```
centrexGroupProfile MANAGED OBJECT CLASS
    DERIVED FROM customerProfile;
    CHARACTERIZED BY
        centrexGroupProfilePackage PACKAGE
            BEHAVIOUR
                centrexGroupProfileCommonBhv,
                customerProfileCreateBhv,
                customerProfileDeleteBhv;;;
REGISTERED AS {managedObjectClass 16};
```

6.1.17 Centrex user profile

```
centrexUserProfile MANAGED OBJECT CLASS
    DERIVED FROM customerProfile;
    CHARACTERIZED BY
        centrexUserProfilePackage PACKAGE
            BEHAVIOUR
                centrexUserProfileCommonBhv,
                customerProfileCreateBhv,
                customerProfileDeleteBhv,
                analogueISDNProfileRelationsBhv;
            ATTRIBUTES
                assocMemberAccessPorts          DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE,
                assocMemberE164DirectoryNumbers DEFAULT VALUE NULL GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        associatedConsolesPkg
            PRESENT IF "this object includes pointers to centrex consoles";
REGISTERED AS {managedObjectClass 17};
```

6.1.18 Circuit mode 3,1 kHz audio

```
circuitMode3100HzAudio MANAGED OBJECT CLASS
    DERIVED FROM customizedBearerService;
    CHARACTERIZED BY
        circuitMode3100HzAudioPkg PACKAGE
            BEHAVIOUR
                circuitMode3100HzAudioCommonBhv,
                circuitMode3100HzAudioCreateBhv,
                circuitMode3100HzAudioDeleteBhv;
            ATTRIBUTES
                maxNumOfInfoChannels            GET-REPLACE,
                maxNumOfTotalCalls              GET-REPLACE;;;
REGISTERED AS {managedObjectClass 18};
```

6.1.19 Circuit mode 64 kbit/s

```
circuitMode64kb MANAGED OBJECT CLASS
    DERIVED FROM customizedBearerService;
    CHARACTERIZED BY
        circuitMode64kbPkg PACKAGE
            BEHAVIOUR
                circuitMode64kbCommonBhv,
                circuitMode64kbCreateBhv,
                circuitMode64kbDeleteBhv;
            ATTRIBUTES
                maxNumOfInfoChannels            GET-REPLACE,
                maxNumOfTotalCalls              GET-REPLACE;;;
REGISTERED AS {managedObjectClass 19};
```

6.1.20 Calling line identification presentation

```
clipSupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        clipSupplServicePkg PACKAGE
            BEHAVIOUR
                clipSupplServiceCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;;;
REGISTERED AS {managedObjectClass 20};
```

6.1.21 Calling line identification restriction

```
clirSupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        clirSupplServicePkg PACKAGE
            BEHAVIOUR
                clirSupplServiceCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                callIdRestrictionOptions        GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 21};
```

6.1.22 Closed user group

```
closedUserGroup MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        cugPackage PACKAGE
            BEHAVIOUR
                cugCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv,
                cugCreateBhv,
                cugDeleteBhv;
            ATTRIBUTES
                cugIndex                        GET,
                cugInterlockCode                GET,
                cugDataNetworkIdentification    GET,
                cugBarring                      DEFAULT VALUE
                                                CustomerAdminModule.cugBarringDefault
                                                GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 22};
```

6.1.23 Closed user group subscription options

```
cugSubscrOptSupplService MANAGED OBJECT CLASS
    DERIVED FROM CustomizedSupplService;
    CHARACTERIZED BY
        cugSubscrOptPackage PACKAGE
            BEHAVIOUR
                cugSubscrOptCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv,
                cugSubscrOptCreateBhv,
                cugSubscrOptDeleteBhv;
            ATTRIBUTES
                preferredCugId                  DEFAULT VALUE
                                                CustomerAdminModule.preferredCugIdDefault
                                                GET-REPLACE,
                cugNetworkAuthorizations        DEFAULT VALUE
                                                CustomerAdminModule.cugNetAuthDefault
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 23};
```

6.1.24 Customer profile

```
customerProfile MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation X.721:1992":top;
    CHARACTERIZED BY
        customerProfilePkg PACKAGE
            BEHAVIOUR
                customerProfileCommonBhv,
                customerProfileStateBhv;
            ATTRIBUTES
                customerProfileId               GET,                --RDN
                "CCITT Recommendation X.721:1992":administrativeState
                                                DEFAULT VALUE
                                                CustomerAdminModule.adminStateDefault
                                                GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":objectCreation,
                "CCITT Recommendation X.721:1992":objectDeletion,
                "CCITT Recommendation X.721:1992":stateChange;;;
REGISTERED AS {managedObjectClass 24};
```

6.1.25 Customized bearer service

```
customizedBearerService MANAGED OBJECT CLASS
    DERIVED FROM customizedService;
    CHARACTERIZED BY
        customizedBearerServicePkg PACKAGE
            BEHAVIOUR
                customizedBearerServiceCommonBhv,
                customizedBearerServiceRelationsBhv;
            ATTRIBUTES
                assocMemberSupplServices        DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembSupplServ
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 25};
```

6.1.26 Customized resources

```
customizedResources MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation X.721:1992":top;
    CHARACTERIZED BY
        customizedResourcesPkg PACKAGE
            BEHAVIOUR
                customizedResourcesCommonBhv,
                customizedResourcesCreateBhv,
                customizedResourcesDeleteBhv,
                customizedResourcesStateBhv,
                customizedResourcesRelationsBhv;
            ATTRIBUTES
                customizedResourcesId           GET,                --RDN
                assocMemberE164DirectoryNumbers DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembE164DN
                                                GET-REPLACE ADD-REMOVE,
                assocMemberCustomizedServices   DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembCustServ
                                                GET-REPLACE ADD-REMOVE,
                assocMemberAccessPorts          DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembAP
                                                GET-REPLACE ADD-REMOVE,
                assocMemberAccessChannels       DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembAC
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":objectCreation,
                "CCITT Recommendation X.721:1992":objectDeletion,
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        adminStatePkg
            PRESENT IF "required";
REGISTERED AS {managedObjectClass 26};
```

6.1.27 Customized service

```
customizedService MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation X.721:1992":top;
    CHARACTERIZED BY
        customizedServicePkg PACKAGE
            BEHAVIOUR
                customizedServiceCommonBhv,
                customizedServiceStateBhv,
                customizedServiceRelationsBhv;
            ATTRIBUTES
                customizedServiceId             GET,                --RDN
                assocOwnerCustomizedResources   DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocOwnerCustRes
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":objectCreation,
                "CCITT Recommendation X.721:1992":objectDeletion,
                "CCITT Recommendation X.721:1992":relationshipChange;;;
    CONDITIONAL PACKAGES
        adminStatePkg
            PRESENT IF "required";
REGISTERED AS {managedObjectClass 27};
```

6.1.28 Customized supplementary service

```
customizedSupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedService;
    CHARACTERIZED BY
        customizedSupplServicePkg PACKAGE
            BEHAVIOUR
                customizedSupplServiceCommonBhv,
                customizedSupplServiceRelationsBhv;
            ATTRIBUTES
                assocOwnerCustomizedServices    DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocOwnerCustServ
                                                GET-REPLACE ADD-REMOVE;;;
REGISTERED AS {managedObjectClass 28};
```

6.1.29 Customized teleservice

```
customizedTeleService MANAGED OBJECT CLASS
    DERIVED FROM customizedService;
    CHARACTERIZED BY
        customizedTeleServicePkg PACKAGE
            BEHAVIOUR
                customizedTeleServiceCommonBhv,
                customizedTeleServiceRelationsBhv;
            ATTRIBUTES
                assocMemberSupplServices        DEFAULT VALUE
                                                CustomerAdminModule.defaultAssocMembSupplServ
                                                GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 29};
```

6.1.30 Direct dialling in

```
ddiSupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        ddiSupplServicePkg PACKAGE
            BEHAVIOUR
                ddiSupplServiceCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;
            ATTRIBUTES
                numOfDigitsNotToTransmit        GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 30};
```

6.1.31 Digital access

```
digitalAccess MANAGED OBJECT CLASS
    DERIVED FROM accessPort;
    CHARACTERIZED BY
        digitalAccessPkg PACKAGE
            BEHAVIOUR
                digitalAccessCommonBhv,
                digitalAccessDeleteBhv;;;
REGISTERED AS {managedObjectClass 31};
```

6.1.32 Directory number

```
directoryNumber MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation X.721:1992":top;
    CHARACTERIZED BY
        directoryNumberPkg PACKAGE
            BEHAVIOUR
                directoryNumberCommonBhv,
                directoryNumberStateBhv,
                directoryNumberRelationsBhv;
            ATTRIBUTES
                "CCITT Recommendation X.721:1992":administrativeState
                                            DEFAULT VALUE
                                            CustomerAdminModule.adminStateDefault
                                            GET-REPLACE,
                assocOwnerCustomerProfiles  DEFAULT VALUE
                                            CustomerAdminModule.defaultAssocOwnerCustProf
                                            GET-REPLACE ADD-REMOVE,
                assocOwnerCustomizedResources   DEFAULT VALUE
                                            CustomerAdminModule.defaultAssocOwnerCustRes
                                            GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":objectCreation,
                "CCITT Recommendation X.721:1992":objectDeletion,
                "CCITT Recommendation X.721:1992":stateChange,
                "CCITT Recommendation X.721:1992":relationshipChange;;;
REGISTERED AS {managedObjectClass 32};
```

6.1.33 CCITT Recommendation E.164 DN

```
e164DN MANAGED OBJECT CLASS
    DERIVED FROM directoryNumber;
    CHARACTERIZED BY
        e164DNPkg PACKAGE
            BEHAVIOUR
                e164DNCommonBhv,
                e164DNDeleteBhv;
            ATTRIBUTES
                e164DirectoryNumberId       GET,                --RDN
                announcement                DEFAULT VALUE
                                            CustomerAdminModule.announcementDefault
                                            GET-REPLACE,
                e164DirectoryNumber         GET;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 33};
```

6.1.34 Group dial plan

```
groupDialPlan MANAGED OBJECT CLASS
    DERIVED FROM "CCITT Recommendation X.721:1992":top;
    CHARACTERIZED BY
        groupDialPlanPackage PACKAGE
            BEHAVIOUR
                groupDialPlanCommonBhv,
                groupDialPlanCreateBhv,
                groupDialPlanDeleteBhv;
            ATTRIBUTES
                groupDialPlanId             GET,                --RDN
                dialledCodesList            GET-REPLACE ADD-REMOVE,
                translationTable            GET-REPLACE ADD-REMOVE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":objectCreation,
                "CCITT Recommendation X.721:1992":objectDeletion,
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 34};
```

6.1.35 Multiple subscriber number

```
msnSupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        msnSupplServicePkg PACKAGE
            BEHAVIOUR
                msnSupplServiceCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv,
                msnSupplServCreateBhv,
                msnSupplServDeleteBhv;
            ATTRIBUTES
                assocDefaultDN                  GET-REPLACE,
                screenOriginatingDN             GET-REPLACE,
                numOfDigitsForCallId            GET-REPLACE;
            NOTIFICATIONS
                "CCITT Recommendation X.721:1992":attributeValueChange;;;
REGISTERED AS {managedObjectClass 35};
```

6.1.36 Primary rate access

```
primaryRateAccess MANAGED OBJECT CLASS
    DERIVED FROM accessPort;
    CHARACTERIZED BY
        primaryRateAccessPkg PACKAGE
            BEHAVIOUR
                primaryRateAccessCommonBhv,
                primaryRateAccessDeleteBhv,
                primaryRateAccessForCustomerAdminBhv;
            ATTRIBUTES
                dChannelLayer2Activation        DEFAULT VALUE
                                                CustomerAdminModule.d-ChannelActivationDefault
                                                GET-REPLACE;;;
    CONDITIONAL PACKAGES
        actingRolePkg
            PRESENT IF "this object class supports the primary and secondary role according to
            CCITT I.310";
REGISTERED AS {managedObjectClass 36};
```

6.1.37 Telefax group 4

```
telefaxG4 MANAGED OBJECT CLASS
    DERIVED FROM customizedTeleService;
    CHARACTERIZED BY
        telefaxG4Pkg PACKAGE
            BEHAVIOUR
                telefaxG4CommonBhv,
                telefaxG4CreateBhv,
                telefaxG4DeleteBhv;
            ATTRIBUTES
                telefaxClass                    GET-REPLACE;;;
REGISTERED AS {managedObjectClass 37};
```

6.1.38 Telephony

```
telephony MANAGED OBJECT CLASS
    DERIVED FROM customizedTeleService;
    CHARACTERIZED BY
        telephonyPkg PACKAGE
            BEHAVIOUR
                telephonyCommonBhv,
                telephonyCreateBhv,
                telephonyDeleteBhv;
            ATTRIBUTES
                maxNumOfInfoChannels            GET-REPLACE,
                maxNumOfTotalCalls              GET-REPLACE;;;
REGISTERED AS {managedObjectClass 38};
```

6.1.39 Teletex

```
teletex MANAGED OBJECT CLASS
    DERIVED FROM customizedTeleService;
    CHARACTERIZED BY
        teletexPkg PACKAGE
            BEHAVIOUR
                teletexCommonBhv,
                teletexCreateBhv,
                teletexDeleteBhv;
            ATTRIBUTES
                teletexMode                     GET-REPLACE;;;
REGISTERED AS {managedObjectClass 39};
```

6.1.40 Terminal portability supplementary service

```
termPortabilitySupplService MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        termPortabilitySupplServicePkg PACKAGE
            BEHAVIOUR
                termPortabilitySupplServiceCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;;;
REGISTERED AS {managedObjectClass 40};
```

6.1.41 Three party

```
threeParty MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplService;
    CHARACTERIZED BY
        threePartyPackage PACKAGE
            BEHAVIOUR
                threePartyCommonBhv,
                supplServCreateBhv,
                supplServDeleteBhv;;;
    REGISTERED AS {managedObjectClass 41};
```

6.2 Definition of packages

6.2.1 Acting role package

```
actingRolePkg PACKAGE
    BEHAVIOUR
        actingRolePkgBhv BEHAVIOUR
            DEFINED AS "An ISDN primary rate access can have three different modes of operation:
            1)  Balanced mode:  no priority is given a certain communication partner
            2)  Master mode:    the appropriate access port is the master in this communication
            3)  Slave mode:     the appropriate access port is the slave in this communication";;
    ATTRIBUTES
        actingRole                      GET-REPLACE;
REGISTERED AS {package 1};
```

6.2.2 Administrative state package

```
adminStatePkg PACKAGE
    ATTRIBUTES
        "CCITT Recommendation X.721:1992":adminstrativeState
                                        GET-REPLACE;
    NOTIFICATIONS
        "CCITT Recommendation X.721:1992":stateChange;
REGISTERED AS {package 2};
```

6.2.3 Associated consoles package

```
associatedConsolesPkg PACKAGE
    BEHAVIOUR
        associatedConsolesPkgBhv BEHAVIOUR
            DEFINED AS "The associatedConsoles attribute provides a pointing relationship from
            each centrex user to the set of centrex consoles which will provide call management
            for that user";;
    ATTRIBUTES
        assocConsoles                   GET-REPLACE ADD-REMOVE;
REGISTERED AS {package 3};
```

6.2.4 Line test capability package

```
lineTestCapabilityPkg PACKAGE
    BEHAVIOUR
        lineTestCapabilityPkgBhv BEHAVIOUR
            DEFINED AS "When a certain access port has the line test capability this attribute
            shows in case of:
            1)  TRUE:   a line test is allowed;
            2)  FALSE:  no line test is allowed.";;
    ATTRIBUTES
        lineTestCapability              GET-REPLACE;
REGISTERED AS {package 4};
```

6.2.5 Subscriber characteristics package

```
subscriberCharacteristicsPkg PACKAGE
    BEHAVIOUR
        subscriberCharacteristicsPkgBhv BEHAVIOUR
            DEFINED AS "The Subscriber Type attribute specifies whether the customer profile is
            for:
            -   a single line customer; or
            -   a hot line customer; or
            -   a multi line customer.

            -   'subscriberType' attribute value = 'singleLine': The customer profile instance
                may be related to at most one access Port instance:
                In the case where the access port is analogue or digital the customer profile is
                related to a single directory Number instance and may contain CEPT or non-
                standard supplementary services.
                In the case of a basicAccess/primaryRateAccess the customer profile may be
                related to one or more directory Number instances and contains at least one
                bearer- and/or teleservice.
            -   subscriberType' attribute value = 'multiLinePBX' or 'multiLineNonPBX ': The
                customer profile instance may be related to several instances of access Port
                which may be of different architecture:
                In case of an homogeneous analogue access architecture the customer profile is
                related to one or more directory number instance(s) and may contain CEPT or non-
                standard supplementary services.
                In case of an homogeneous digital access architecture the customer profile is
                related to one or more directory number instance(s) and may contain CEPT or non-
                standard supplementary services.
                In case of an homogeneous basic access/primary rate access architecture the
                customer profile may be related to one or more directory number instance(s) and
                contains at least one bearer- and/or teleservice.
                In case of a mixture of analogue-/ISDN-/digital access the customer profile may
                be related to one or more directory number instance(s) and contains for each
                access port architecture at least one customized resources instance and its
                appropriate service instance(s).

            The Subscriber Category attribute identifies the customer as being for instance:
            -   a standard subscriber (default value);
            -   a coin box;
            -   a mobile subscriber;
            -   a test equipment;
            -   an operator etc.

            The Subscriber Type attribute is a single-valued, read-write attribute. In the
            initial state, it has the 'singleLine' value. Changing the value of the Subscriber
            Type attribute generates an attribute value change notification.

            The Subscriber Category attribute is a single-valued, read-write attribute. In the
            initial state, it has the 'standard' value. Changing the value of the Subscriber
            Category attribute generates an attribute value change notification.";;
    ATTRIBUTES
        subscriberType                  DEFAULT VALUE
                                        CustomerAdminModule.subscriberTypeDefault
                                        GET-REPLACE,
        subscriberCategory              DEFAULT VALUE
                                        CustomerAdminModule.subscriberCategoryDefault
                                        GET-REPLACE;
        NOTIFICATIONS
            "CCITT Recommendation X.721:1992":attributeValueChange;
REGISTERED AS {package 5};
```

6.3 Definition of behaviours

6.3.1 Access channel common behaviour

```
accessChannelCommonBhv BEHAVIOUR
    DEFINED AS "The access channel object class represents an individual ISDN B-channel/D-channel
    of an ISDN access port or an individual channel of a digital access port.

    This object class is a specialization of the connection termination point Bi-directional
    object class defined in CCITT Recommendation M.3100. It identifies the set of attributes and
    notifications which apply in common to all types of ISDN and digital access channels.

    Instances of this object class are contained within ISDN or digital access ports.

    The following inherited properties defined in conditional packages become mandatory for CA:
    -   cTPId                                from ctpInstancePackage;
    -   objectCreation and-objectDeletion    from createDeleteNotificationsPackage;
    -   operationalState                     from operationalStatePackage;
    -   stateChange                          from stateChangeNotificationPackage;
    -   attributeValueChange                 from attributeValueChangeNotificationPackage;
    -   channelNumber                        from channelNumberPackage.

    All other defined conditional packages in the super classes of Access Channel are not
    inherited.

    The number of access channels belonging to an access port depends on the access port
    architecture.

    This object class need only be instanciated when services are be provisioned on a per access
    channel basis.";
```

6.3.2 Access channel create behaviour

```
accessChannelCreateBhv BEHAVIOUR
    DEFINED AS "When creating an access channel object in the scope of an ISDN basic access the
    following general constraints on the attributes are made:
    -   channel type is B or D;
    -   channel number is 0 for D- and 1 or 2 for B-channel type;
    -   channel rate is 64 kbit/s for B-channel and 16 kbit/s for D-channel type.

    When creating an access channel object in the scope of an ISDN primary rate access the
    following general constraints on the attributes are made:
    -   channel type is B or D;
    -   channel number is 1 or 2 or ... or 31;
    -   channel rate is 64 kbit/s.";
```

6.3.3 Access channel delete behaviour

```
accessChannelDeleteBhv BEHAVIOUR
    DEFINED AS "An instance of the access channel object class can only be deleted if attribute
    assocOwnerCustomizedResource has the value empty set.";
```

6.3.4 Access channel for customer administration behaviour

```
accessChannelForCustomerAdminBhv BEHAVIOUR
    DEFINED AS "Information relevant for customer administration when dealing with channels
    consists of the following attributes:
    Channel Type: The Channel Type attribute specifies for instance ISDN D-channel, B-channel and
    non-ISDN channel.
    Channel Number: The Channel Number attribute identifies the channel within the access port
    (e.g. 1 = first B-channel of an ISDN access port). This attribute is inherited from CCITT
    Recommendation M.3100 Connection Termination Point Bi-directional object class.
    Channel Rate: The Channel Rate attribute specifies the data transfer rate of the channel
    (e.g. 64 kbit/s for ISDN B-channel, 16 kbit/s for ISDN basic access D-channel).";
```

6.3.5 Access channel relation behaviour

```
accessChannelRelationBhv BEHAVIOUR
    DEFINED AS "When a certain access channel is linked with a certain set of services a pointer
    to the appropriate customized resources object has to be maintained.

    This pointer obeys the rules for group relationships defined in CCITT Recommendation X.732.

    The access channel is in the member-role. Adding or removing set-elements to/from this group
    attribute causes a relationship change notification. In the initial state the attribute has
    the NULL value.";
```

6.3.6 Access channel state behaviour

```
accessChannelStateBhv BEHAVIOUR
    DEFINED AS "The access channel object class may support the following generic state
    attributes which obey the rules of the CCITT Recommendation X.731 state management function:
    -   administrative state;
    -   operational state.

    When a change of state occurs a state Change-notification will be emitted.

    An administrative state change to superior object causes appropriate state change to
    contained object";
```

6.3.7 Access port common behaviour

```
accessPortCommonBhv BEHAVIOUR
    DEFINED AS "The access port object class terminates customer service access within the
    exchange. This object class is a specialization of the Trail Termination Point Bi-directional
    object class defined in CCITT Recommendation M.3100. The following inherited conditional
    packages become mandatory for customer administration:
    -   tTPId from ttpInstancePackage;
    -   objectCreation; and
    -   objectDeletion          from createDeleteNotificationsPackage;
    -   administrativeState     from administrativeStatePackage;
    -   stateChange             from stateChangeNotificationPackage;
    -   attributeValueChange    from attributeValueChangeNotificationPackage.

    The inherited connectivity pointer attributes have NULL value.

    This object class is specialized to model ISDN basic access, ISDN primary rate access,
    digital access and analogue access. It identifies the set of attributes which apply in common
    to all types of access ports and has no instantications of itself. This object class may be
    related to a customer profile and its related set of customized resources.";
```

6.3.8 Access port relations behaviour

```
accessPortRelationsBhv BEHAVIOUR
    DEFINED AS "When a certain access port is linked with a certain set of services a pointer to
    the appropriate customized resources object has to be maintained.

    This pointer obeys the rules for the Group Relationship defined in CCITT Recommendation
    X.732. Adding or removing set-elements to/from this group attribute cause a relationship
    change notification. In the initial state the attribute has the NULL value.

    When a certain access port is linked with a certain Directory Number a pointer to the
    appropriate customer profile object has to be maintained.

    This pointer obeys the rules for the group relationship defined in CCITT Recommendation
    X.732. Adding or removing set-elements to/from this group attribute cause a relationship
    change notification. In the initial state the attribute has the NULL value.";
```

6.3.9 Access port state behaviour

```
accessPortStateBhv BEHAVIOUR
    DEFINED AS "The access port object class supports the following generic state attributes
    which obey the rules of the CCITT Recommendation X.731 state management function:
    1)  administrativeState;
    2)  operationalState.

    When a change of state occurs a state Change-notification will be emitted.

    Administrative state change to superior object causes appropriate state change to contained
    object.";
```

6.3.10 Advice of charge: charging information during the call, common behaviour

```
adviceOfChargeDuringCommonBhv BEHAVIOUR
    DEFINED AS "This service provides the served user with cumulative charging information 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.";
```

6.3.11 Advice of charge: charging information at the end of the call, common behaviour

```
adviceOfChargeEndCommonBhv BEHAVIOUR
    DEFINED AS "This 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.";
```

6.3.12 Advice of charge: charging information at call set-up time, common behaviour

```
adviceOfChargeSetupCommonBhv BEHAVIOUR
    DEFINED AS "This 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.";
```

6.3.13 Analogue access common behaviour

```
analogueAccessCommonBhv BEHAVIOUR
    DEFINED AS "The analogue access port object class is the conventional two-wire loop access to
    a basic telephone set. Tele and bearer services cannot be assigned to analogue access ports.

    An analogue access port can be thought of as possessing only one access channel with a bearer
    capability of speech.";
```

6.3.14 Analogue access delete behaviour

```
analogueAccessDeleteBhv BEHAVIOUR
    DEFINED AS "An instance of this object class can only be deleted if no relations to customer
    profile- and customized resources object class instances exist.";
```

6.3.15 Analogue access for customer administration behaviour

```
analogueAccessForCustomerAdminBhv BEHAVIOUR
    DEFINED AS "The line signalling attribute specifies which signalling the analogue access port
    uses for the line (e.g. dual tone multi-frequency or pulse dialling).

    The line characteristics attribute specifies the transmission characteristics of the analogue
    line (e.g. attenuation).

    The third wire equipment attribute specifies whether the analogue access port supports
    control of external equipment via a third wire. This attribute specifies the capability of
    the analogue access port, it does not represent subscription to a service requiring this
    capability (e.g. private subscriber meter).";
```

6.3.16 Analogue ISDN profile common behaviour

```
analogueISDNProfileCommonBhv BEHAVIOUR
    DEFINED AS "This type of customer profile provides the common characteristics for a
    subscriber to one or more ISDN and/or analogue lines. It provides the single point of
    reference to the resources and services associated with the customer.";
```

6.3.17 Analogue ISDN profile relations behaviour

```
analogueISDNProfileRelationsBhv BEHAVIOUR
    DEFINED AS "This object class maintains two relationships, represented by:
    1)  a pointer to one or more instances of directory Number which are associated with this
        type of customer profile; and
    2)  a pointer to one or more instances of access port which are associated with this type of
        customer profile.

    Each pointer is a group relationship attribute which obeys the rules defined in CCITT
    Recommendation X.732. The instance of this object class is playing the owner role. Adding or
    removing members to/from a group attribute causes a relationship change notification. In the
    initial state these pointers have a NULL default value. At least one of these pointers shall
    be assigned a non-NULL value at all times.";
```

6.3.18 Basic access common behaviour

```
basicAccessCommonBhv BEHAVIOUR
    DEFINED AS "The ISDN basic access port object class consists of up to 2 B-channels of
    64 kbit/s for transfer of information and data and 1 D-channel of 16 kbit/s for signalling
    and data transfer (2 B + D).";
```

6.3.19 Basic access delete behaviour

```
basicAccessDeleteBhv BEHAVIOUR
    DEFINED AS "An instance of this object class can only be deleted if no relations to customer
    profile- and customized resources object class instances exist.";
```

6.3.20 Basic access for customer administration behaviour

```
basicAccessForCustomerAdminBhv BEHAVIOUR
    DEFINED AS "The D-channel activation attributes specify whether layers one and/or two have to
    be held active. The default value for these attributes are 'deact'.";
```

6.3.21 Completion of calls to busy subscriber, common behaviour

```
callCompletionBusyCommonBhv BEHAVIOUR
    DEFINED AS "This service enables a calling user, encountering a busy destination, to have the
    call completed when the busy destination becomes not busy, without having to make a new call
    attempt.";
```

6.3.22 Call forwarding busy, common behaviour

```
callForwardBusyCommonBhv BEHAVIOUR
    DEFINED AS "This service permits a served user to have the network send all incoming calls,
    which meet busy and are addressed to the served user's number to another number. The served
    user's originating service is unaffected.";
```

6.3.23 Call forwarding no reply, common behaviour

```
callForwardNoReplyCommonBhv BEHAVIOUR
    DEFINED AS "This service permits a served user to have the network send all incoming calls,
    which meet no reply and are addressed to the served user's number to another number. The
    served user's originating service is unaffected.";
```

6.3.24 Call forwarding unconditional, common behaviour

```
callForwardUncCommonBhv BEHAVIOUR
    DEFINED AS "This service permits a served user to have the network send all incoming calls
    addressed to the served user's number to another number. The served user's originating
    service is unaffected. If this service is activated, calls are forwarded no matter what is
    the condition of the termination.";
```

6.3.25 Call hold common behaviour

```
callHoldCommonBhv BEHAVIOUR
    DEFINED AS "This service allows a user to interrupt communications on an existing call and
    then subsequently, if desired, re-establish communications.";
```

6.3.26 Call waiting common behaviour

```
callWaitingCommonBhv BEHAVIOUR
    DEFINED AS "This service permits a user to be informed of an incoming call with an indication
    when all access to the user is busy. The user then has the choice of accepting, rejecting or
    ignoring the waiting call.";
```

6.3.27 Centrex console profile common behaviour

```
centrexConsoleProfileCommonBhv BEHAVIOUR
    DEFINED AS "This type of customer profile provides the common characteristics for a centrex
    console user. It provides the single point of reference to the resources and services
    associated with the console.";
```

6.3.28 Centrex console profile delete behaviour

```
centrexConsoleProfileDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this object class is deleted, the associated consoles
    relationship pointer in the centrex user profile object class instances shall be updated.";
```

6.3.29 Centrex group profile common behaviour

```
centrexGroupProfileCommonBhv BEHAVIOUR
    DEFINED AS "This type of customer profile provides the common characteristics for a centrex
    group. It provides a single point of reference to the services associated with all members of
    that group.";
```

6.3.30 Centrex user profile common behaviour

```
centrexUserProfileCommonBhv BEHAVIOUR
    DEFINED AS "This type of customer profile provides the common characteristics for a centrex
    user. It provides the single point of reference to the resources and services associated with
    the user.";
```

6.3.31 Circuit mode 3,1 kHz audio common behaviour

```
circuitMode3100HzAudioCommonBhv BEHAVIOUR
    DEFINED AS "(Text from CCITT Recommendation I.231, § 2) This bearer service category is
    intended to support speech.

    All recommendations for the transfer of speech information in the network apply to this
    bearer service.

    This circuit-mode bearer service category allows:
    -   two users (e.g. terminals, PABXs) in a point-to-point configuration to communicate via
        ISDN using speech encoding into 64 kbit/s digital signals over the B-channel, in both
        directions continuously and simultaneously for the duration of a call;
    -   three or more users in a multipoint configuration (refer to CCITT Recommendation I.254
        for the supplementary service description for three-party service and conference
        calling).";
```

6.3.32 Circuit mode 3,1 kHz audio create behaviour

```
circuitMode3100HzAudioCreateBhv BEHAVIOUR
    DEFINED AS "An instance of this bearer service is created as a subordinate of an existing
    instance of customer profile.

    Creating an instance of this bearer service generates an object creation notification.";
```

6.3.33 Circuit mode 3,1 kHz audio delete behaviour

```
circuitMode3100HzAudioDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this bearer service is deleted the member objects
    participating in a group relationship with this instance have to update their relationship
    attributes. Deleting an instance of this object class generates an object deletion
    notification.";
```

6.3.34 Circuit mode 64 kbit/s common behaviour

```
circuitMode64kbCommonBhv BEHAVIOUR
    DEFINED AS "(Text from CCITT Recommendation I.231, § 1) This bearer service category provides
    the unrestricted information transfer between S/T reference points. It may, therefore, be
    used to support various user applications. Examples include:
    -   speech - 3,1 kHz audio;
    -   multiple subrate information streams multiplexed into 64 kbit/s by the user;
    -   transparent access to a CCITT Recommendation X.25 public network.

    User information is transferred over a B-channel, signalling is provided over a D-channel.";
```

6.3.35 Circuit mode 64 kbit/s create behaviour

```
circuitMode64kbCreateBhv BEHAVIOUR
    DEFINED AS "An instance of this bearer service is created as a subordinate of an existing
    instance of customer profile.

    Creating an instance of this bearer service generates an object creation notification.";
```

6.3.36 Circuit mode 64 kbit/s delete behaviour

```
circuitMode64kbDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this bearer service is deleted the member objects
    participating in a group relationship with this instance have to update their relationship
    attributes. Deleting an instance of this object class generates an object deletion
    notification.";
```

6.3.37 Calling line identification presentation supplementary service common behaviour

```
clipSupplServiceCommonBhv BEHAVIOUR
    DEFINED AS "This supplementary service provides the called party with the possibility of
    receiving identification of the calling party. In addition to the ISDN number, the calling
    line identity may include a subaddress generated by the calling user and transparently
    transported by the network. The network shall deliver the calling line identity to the called
    party during call establishment, regardless of the terminal capability to handle the
    information.";
```

6.3.38 Calling line identification restriction supplementary service common behaviour

```
clirSupplServiceCommonBhv BEHAVIOUR
    DEFINED AS "This supplementary service provides the calling party with the possibility to
    prevent presentation of the calling party's ISDN number, and subaddress information (if any)
    to the called party. If the called party subscribes to the CLIP supplementary service then
    the called party shall receive an indication that the calling party information is not
    available due to restriction.";
```

6.3.39 Closed user group common behaviour

```
cugCommonBhv BEHAVIOUR
    DEFINED AS "The closedUserGroup supplementary service is used to store the closed user group
    general subscription options specified by CCITT. Referenced associated services (defined in
    attribute AssocOwnerCustomizedService) shall exist prior to referencing. Referenced
    associated services cannot be deleted.";
```

6.3.40 Closed user group create behaviour

```
cugCreateBhv BEHAVIOUR
    DEFINED AS "Attribute cugIndex shall be explicitly assigned upon object creation. No two
    instances of the closed user group object class contained within a single object may have
    identical values for attribute cugIndex. Attribute cugInterlockCode shall be assigned
    explicitly upon object creation.
    No two instances of the closed user group object class contained within a single object may
    have identical combinations of attribute cugInterlockCode and cugDataNetworkIdentification.";
```

6.3.41 Closed user group delete behaviour

```
cugDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of the closed user group object class is deleted any related
    instances of the CUG subscription options object class are implicitly deleted.";
```

6.3.42 Closed user group subscription option common behaviour

```
cugSubscrOptCommonBhv BEHAVIOUR
    DEFINED AS "The CUG subscription options object may only be instanciated if either attribute
    preferredCugId is assigned a non-NULL value or attribute cugNetworkAuthorizations is not
    empty. M_SET operations which would result in preferredCugId value NULL and
    cugNetworkAuthorizations value empty set are not allowed.

    This object can be instanciated to store either service independent (general subscription)
    options or service dependent subscription (per service) options.

    For the service dependent subscription options (denoted by AssocOwnerCustomizedServices not
    equal to empty set):
    The service dependent subscription options override any service independent subscription
    options which are assigned for the given CCITT Recommendation E.164 DN.

    For the service independent subscription options (denoted by AssocOwnerCustomizedServices
    equal to empty set):
    The service independent subscription options are valid for all teleservices and bearer
    services which subscribe the closed user group feature and for which no service dependent
    subscription options are defined.";
```

6.3.43 Closed user group subscription option create behaviour

```
cugSubscrOptCreateBhv BEHAVIOUR
    DEFINED AS "This object may only be instanciated if either attribute preferredCugId is
    assigned or attribute cugNetworkAuthorizations is not empty.

    For the service dependent subscription options (denoted by AssocOwnerCustomizedServices not
    equal to empty set):

    A closed user group shall be assigned to a service prior to creation of this object class for
    that service (i.e. the service shall be referenced in attribute AssocOwnerCustomizedServices
    of a closedUserGroup supplementary service for the relevant CCITT Recommendation E.164 DN).

    At most one service dependent instance of this object class may exist per teleservice or
    bearer service.

    For the service independent subscription options (denoted by AssocOwnerCustomizedServices
    equal to the empty set):

    At most one service independent instance of this object class may exist per CCITT
    Recommendation E.164 DN.

    Prior to creation of an instance of the closed user group subscription options object class
    an instance of the closedUserGroup supplementary service shall exist for the relevant
    subclass of customer profile.";
```

6.3.44 Closed user group subscription option delete behaviour

```
cugSubscrOptDeleteBhv BEHAVIOUR
    DEFINED AS "For the service independent subscription options (denoted by AssocOwner
    CustomizedServices equal to empty set):

    This object is implicitly deleted when the last cug assigned for the customer is deleted.

    For the service dependent subscription options (denoted by AssocOwnerCustomizedServices not
    equal to empty set):
    This object is implicitly deleted when the last CUG subscription is deleted for the given
    teleservice or bearer service (i.e. when the teleservice or bearer service is no longer
    referenced in attribute assocServices of some closedUserGroup supplementary service assigned
    to the CCITT Recommendation E.164 DN).";
```

6.3.45 Customer profile common behaviour

```
customerProfileCommonBhv BEHAVIOUR
    DEFINED AS "The customer profile represents a single point of reference used to bind together
    a range of services and resources for CA purposes. The customer profile may, therefore,
    represent a single subscriber or a group of subscribers (e.g. centrex group), therefore,
    allowing the maximum flexibility in the administration of all subscribers.

    The following notifications from CCITT Recommendation X.721 have been adopted:
    -   object creation;
    -   object deletion;
    -   state change.";
```

6.3.46 Customer profile create behaviour

```
customerProfileCreateBhv BEHAVIOUR
    DEFINED AS "There are four different scenarios in which a customer profile can exist:
    1)  an analogueIsdnCustomerProfile instance is created as a subordinate of an existing
        instance of Managed Element. It shall be related to at least one instance of CCITT
        Recommendation E.164 DN and/or one instance of analogue access or basic access or primary
        rate access or digital access;
    2)  a centrexGroupProfile instance is created as a subordinate of an existing instance of
        Managed Element. It shall not be related to instances of CCITT Recommendation E.164 [5]
        DN or instances of access ports;
    3)  a centrexUserProfile instance is created as a subordinate of an existing instance of
        centrex group profile. It shall be related to at least one instance of CCITT
        Recommendation E.164 [5] DN and/or one instance of analogue access or basic access or
        primary rate access or digital access;
    4)  a centrexConsoleProfile instance is created as a subordinate of an existing instance of
        centrex group profile. It shall be related to at least one instance of CCITT
        Recommendation E.164 [5] DN and/or one instance of analogue access or basic access or
        primary rate access or digital access.

    Creating an instance of customer profile generates an object creation notification.";
```

6.3.47 Customer profile delete behaviour

```
customerProfileDeleteBhv BEHAVIOUR
    DEFINED AS "When deleting a customer profile instance, all contained objects are also
    deleted. The contained objects are instances of customized resources or customized service.
    When deleting a customer profile instance, the member objects participating in a group
    relationship with this instance have to update their own relationship attribute, i.e. to
    remove the customer profile instance from the set-value of the attribute.";
```

6.3.48 Customer profile state behaviour

```
customerProfileStateBhv BEHAVIOUR
    DEFINED AS "The customer profile object class supports the generic state attribute
    administrative state which obeys the rules of CCITT Recommendation X.731.

    The administrative state attribute can have three values: 'locked', 'unlocked' and 'shutting
    down'. When the administrative state attribute is given the 'locked' value, then the customer
    profile is prohibited from operational use, i.e. the set of resources and services
    provisioned for this customer profile are not accessible for all call processing. When the
    administrative state attribute is given the shutting down value, then the resources and
    services provisioned for this customer profile cannot be used by any further call processing
    except for the call it is currently engaged in.

    Changing the value of the administrative state attribute generates a state change
    notification.

    In the initial state, the administrative state attribute has the 'unlocked' default value.

    An administrative state change to superior object causes appropriate state change to
    contained object.";
```

6.3.49 Customized bearer service common behaviour

```
customizedBearerServiceCommonBhv BEHAVIOUR
    DEFINED AS "The customized bearer service object class is a specialization of the customized
    service object class. It contains the characteristics common to all types of ISDN bearer
    services.

    Mainly, it reflects information transfer and access attributes used for the characterization
    of a bearer service as described in CCITT Recommendations I.210 and I.230.

    This customized bearer service object class is never instanciated.

    The information transfer attributes are:
    -   establishment;
    -   symmetry; and
    -   configuration.

    The access attribute is:
    -   access channel and rate.

    These four attributes are single-valued, read-write attributes. Changing the value of one of
    them generates an attribute value change notification.";
```

6.3.50 Customized bearer service relations behaviour

```
customizedBearerServiceRelationsBhv BEHAVIOUR
    DEFINED AS "AssocMemberSupplServices is a set valued attribute pointing to the supplementary
    service objects associated with this bearer service. associated supplementary services are
    contained within the scope of the same customer profile managed object. This pointer obeys
    the rules of the group relationship defined in CCITT Recommendation X.732.

    The bearer service is playing the owner-role of a certain group of supplementary services and
    the relationship attribute points to the set of members of the group.

    Adding or removing members to/from this group attribute causes a relationship change
    notification and the member objects have to update their own relationship attribute.

    In the initial state the attribute has the NULL default value.";
```

6.3.51 Customized resources common behaviour

```
customizedResourcesCommonBhv BEHAVIOUR
    DEFINED AS "The customized resources object class represents the services and/or resources
    provisioning for a customer. It allows association between:
    -   one or more directory numbers;
    -   one or more services;
    -   one or more access ports;
    -   one or more access channels.

    NOTE:   Customized resources may not be used to connect channels to channels or access ports
            to channels.

    The channels may span more than one access port. The customized resources object class is not
    needed when all resources and services provisioned for the subscriber can be freely combined
    (i.e. all services are applicable to all access ports and DN). It is needed when, for
    instance, certain directory numbers are applicable only to certain access ports.

    The following notifications from CCITT Recommendation X.721 have been adopted:
    -   object creation;
    -   object deletion;
    -   relationship change.";
```

6.3.52 Customized resources create behaviour

```
customizedResourcesCreateBhv BEHAVIOUR
    DEFINED AS "A customizedResources instance is created as a subordinate of an existing
    instance of customer profile. At least two of the following set attributes of this object
    shall be assigned non empty values upon object creation:
    -   assocMemberE164DirectoryNumbers;
    -   assocMemberCustomizedServices;
    -   assocMemberAccessPorts;
    -   assocMemberAccessChannels.

    NOTE:   Customized resources may not be used to connect channels to channels or access ports
            to channels.

    Creating an instance of customized resources generates an object creation notification.";
```

6.3.53 Customized resources delete behaviour

```
customizedResourcesDeleteBhv BEHAVIOUR
    DEFINED AS "When deleting a customized resources instance, the member objects participating
    in a group relationship with this instance have to update their own relationship attribute,
    i.e. to remove the customized resources instance from the set-value of the attribute.

    The member objects are instances of directory number or access port or access channel or
    customized service. Deleting an instance of customized resources generates an object deletion
    notification.";
```

6.3.54 Customized resources relations behaviour

```
customizedResourcesRelationsBhv BEHAVIOUR
    DEFINED AS "The customized resources object class maintains four different relationships with
    the following object classes:
    -   directory number;
    -   access port;
    -   access channel; and
    -   customized service.

    These relationships are represented by four group relationship attributes which obey the
    rules defined in CCITT Recommendation X.732. A customized resources object instance is
    playing the owner-role and each relationship attribute points to the set of members of the
    group. Adding or removing members to/from a group attribute causes a relationship change
    notification and the member objects have to update their own relationship attribute.

    The pointers to instances of CCITT Recommendation E.164 DN, access port, customized service
    and access channel cannot have a NULL value all at the same time.

    The customized resources object class is in charge of checking the compatibility between
    services (customized service objects) and resources (access port objects, access channel
    objects, DN objects) associated with it.

    For example:
    -   only CEPT or non-standard supplementary services may be associated with analogue or
    digital access ports;
    -   only ISDN or non-standard supplementary services may be associated with basic or primary
        rate access ports.";
```

6.3.55 Customized resources state behaviour

```
customizedResourcesStateBhv BEHAVIOUR
    DEFINED AS "The customized resources object class may support the generic state attribute
    administrative state which obeys the rules of CCITT Recommendation X.731.

    The administrative state attribute can have three values: 'locked', 'unlocked' and 'shutting
    down'. When the Administrative State attribute is given the 'locked' value, then the
    customized resource is prohibited from operational use, i.e. the set of resources and
    services provisioned for this customized resource are not accessible for call processing.
    When the administrative state attribute is given the shutting down value, then the resources
    and services associated with this customized resource cannot be used by any further call
    processing except the one it is currently engaged in.

    Changing the value of the administrative state attribute generates a state change
    notification.

    In the initial state, the administrative state attribute has the 'unlocked' default value.

    An administrative state change to superior object causes appropriate state change to
    contained object.";
```

6.3.56 Customized services common behaviour

```
customizedServiceCommonBhv BEHAVIOUR
    DEFINED AS "The customized service object class is assigned a set of characteristics which
    are common to all teleservices, bearer services and supplementary services. It is contained
    by name binding within the customer profile object class.

    The following notifications from CCITT Recommendation X.721 have been adopted:
    -   object creation;
    -   object deletion;
    -   relationship change.

The customized service object class is not instanciated.";
```

6.3.57 Customized service relations behaviour

```
customizedServiceRelationsBhv BEHAVIOUR
    DEFINED AS "The customized service object class maintains one relationship with the
    customized resources object class. This relationship is represented by a group relationship
    attribute which obeys the rules defined in CCITT Recommendation X.732.

    Adding or removing owners to/from this group attribute causes a relationship change
    notification and the owner objects have to update their own relationship attribute.

    The default value is NULL.";
```

6.3.58 Customized service state behaviour

```
customizedServiceStateBhv BEHAVIOUR
    DEFINED AS "The customized service object class may support the generic state attribute
    administrative state which obeys the rules of CCITT Recommendation X.731.

    The administrative state attribute can have three values: 'locked', 'unlocked' and 'shutting
    down'. When the administrative state attribute is given the 'locked' value, then the
    customized service is prohibited from operational use, i.e. it cannot be used by any call
    processing. When the administrative state attribute is given the shutting down value, then
    the customized service cannot be used by any further call processing except the one it is
    currently engaged in.

    Changing the value of the administrative state attribute generates a state change
    notification.

    In the initial state, the administrative state attribute has the 'unlocked' default value.

    An administrative state change to superior object causes appropriate state change to
    contained object.";
```

6.3.59 Customized supplementary service common behaviour

```
customizedSupplServiceCommonBhv BEHAVIOUR
    DEFINED AS "The customized supplementary service object class is a specialization of the
    customized service object class. It represents the supplementary services providing
    additional capabilities to be used with a basic telecommunication service. It may represent:
    -   an ISDN supplementary service as defined in ETSs;
    -   a CEPT supplementary service as defined in the CEPT Handbook;
    -   a non-standard supplementary service, i.e. operator-specific service.

    A customized supplementary service may or may not be associated with a set of teleservices
    and/or bearer services thereby supplementing these services.

    The customized supplementary object class is not instanciated.

    If a subclass of the supplementary service object class is instanciated on a directory number
    (and port) independent basis and another instance is created on a directory number (and/or
    port) specific basis then the decision as to which instance should take priority shall be
    made on an implementation specific basis (per subclass of supplementary service object class)
    unless agreed international standards exist.

    Similarly, if an instance of a subclass of supplementary service object class is instanciated
    for a centrex group profile and another instance is created on a centrex user or centrex
    console specific basis the decision which instance should take precedence is an
    implementation specific issue.";
```

6.3.60 Customized supplementary service relations behaviour

```
customizedSupplServiceRelationsBhv BEHAVIOUR
    DEFINED AS "The 'assocOwnerCustomizedServices' is a set-valued attribute pointing to the
    teleservice or bearer service objects associated with this supplementary service.

    Associated bearer or teleservices are contained within the scope of the same customer profile
    managed object.

    This pointer obeys the rules of the group relationship defined in CCITT Recommendation X.732.

    Adding or removing owners to/from this group attribute causes a relationship change
    notification and the owner objects have to update their own relationship attribute.

    In the initial state, the attribute has the NULL value.";
```

6.3.61 Customized teleservice relations behaviour

```
customizedTeleServiceRelationsBhv BEHAVIOUR
    DEFINED AS "AssocMemberSupplServices is a set valued attribute pointing to the supplementary
    service objects associated with this teleservice. Associated supplementary services are
    contained within the scope of the same customer profile managed object. This pointer obeys
    the rules of the Group Relationship defined in CCITT Recommendation X.732.

    Adding or removing members to/from this group attribute causes a relationship change
    notification and the member objects have to update their own relationship attribute.

    In the initial state the attribute has the NULL default value.";
```

6.3.62 Customized teleservice common behaviour

```
customizedTeleServiceCommonBhv BEHAVIOUR
    DEFINED AS "The customized teleservice object class is a specialization of the customized
    service object class.

    This object class contains the characteristics common to all teleservice object classes.
    Mainly, it reflects information transfer and access attributes used for the characterization
    of a teleservice as described in CCITT Recommendation I.210.

    The information transfer attributes are:
    -   establishment;
    -   symmetry; and
    -   configuration.

    The access attribute is:
    -   access channel and rate.

    These four attributes are single-valued, read-write attributes. Changing the value of one of
    them generates an attribute value change notification.

    The customized teleservice object class is not instanciated.";
```

6.3.63 Direct dialling in supplementary service common behaviour

```
ddiSupplServiceCommonBhv BEHAVIOUR
    DEFINED AS "This supplementary service enables a user to call directly via a public ISDN a
    user on a private ISDN by use of the public ISDN numbering plan.";
```

6.3.64 Digital access common behaviour

```
digitalAccessCommonBhv BEHAVIOUR
    DEFINED AS "The digital access port object class represents the termination of any non-ISDN
    digital access.";
```

6.3.65 Digital access delete behaviour

```
digitalAccessDeleteBhv BEHAVIOUR
    DEFINED AS "An instance of this object class can only be deleted if no relations to customer
    profile- and customized resources object class instances exist.";
```

6.3.66 Directory number common behaviour

```
directoryNumberCommonBhv BEHAVIOUR
    DEFINED AS "The directory number object class is a resource in its own right. It is a
    constituent part of the user interface and is directly related to one or more dialling plans
    being part of the managed element.

    Directory numbers may be assigned to an individual customer independently of the access port
    architecture and subscription service type.

    The directory number object class is not instanciated.

    The following notifications from CCITT Recommendation X.721 have been adopted:
    -   object creation;
    -   object deletion;
    -   state change; and
    -   relationship change.";
```

6.3.67 Directory number relation behaviour

```
directoryNumberRelationsBhv BEHAVIOUR
    DEFINED AS "The DN maintains two different relationships when assigned to a customer.

    Pointer to one or more customer profile(s): It specifies the assignment of a directory number
    to a certain customer. This pointer obeys the rules of the group relationship defined in
    CCITT Recommendation X.732. Adding or removing an owner object to/from this group attribute
    causes a relationship change notification and the owner object has to update its own
    relationship attribute. In the initial state the attribute has the NULL value.

    Pointer to one or more customized resources: It specifies the assignment of a CCITT
    Recommendation E.164 directory number to a set of customized resources (services and access
    ports). This pointer obeys the rules of the group relationship defined in CCITT
    Recommendation X.732. Adding or removing owner objects to/from this group attribute causes a
    relationship change notification and the owner objects have to update their own relationship
    attribute. In the initial state the attribute has the NULL value.";
```

6.3.68 Directory number state behaviour

```
directoryNumberStateBhv BEHAVIOUR
    DEFINED AS "The DN object class supports the generic state attribute administrative state
    which obeys the rules of CCITT Recommendation X.731. The administrative state attribute can
    have three values: 'locked', 'unlocked' and 'shutting down'. When the administrative state
    attribute is given the 'locked' value, then the directory number is prohibited from
    operational use, i.e. it cannot support any call processing. When the Administrative State
    attribute is given the 'shutting down' value, then the directory number cannot accept any
    further call processing except the one it is currently engaged in. Changing the value of the
    administrative state attribute generates a state change notification.

    An administrative state change to superior object causes appropriate state change to
    contained objects.

    In the initial state, the administrative state attribute has the 'unlocked' default value.";
```

6.3.69 CCITT Recommendation E.164 DN common behaviour

```
e164DNCommonBhv BEHAVIOUR
    DEFINED AS "The CCITT Recommendation E.164 DN object class represents directory numbers
    belonging to the ISDN numbering plan defined in CCITT Recommendation E.164.

    The CCITT Recommendation E.164 DN attribute corresponds to the ISDN number. It is composed of
    two fields:
    -   the country code (optional); and
    -   the national significant number.
        The national significant number itself is composed of two fields:
        -   the national destination code (optional);
        -   the subscriber number.

    The total number length shall be less or equal to 15 digits.

    The CCITT Recommendation E.164 directory number attribute is a single-valued, read-only
    attribute.

    For the purpose of CA, the announcement attribute of the CCITT Recommendation E.164 DN is
    only valid when the 'associated owner customer profile' attribute is set to empty set. It
    decides what call handling treatment (announcement, tone, or otherwise) should be applied to
    a disconnected CCITT Recommendation E.164 DN. The meaning of the various announcement values
    for a number which is not connected is an implementation specific issue. The default value of
    this attribute is also implementation dependent.";
```

6.3.70 CCITT Recommendation E.164 DN delete behaviour

```
e164DNDeleteBhv BEHAVIOUR
    DEFINED AS "An CCITT Recommendation E.164 DN instance can only be deleted if attributes
    assocOwnerCustomerProfiles and assocOwnerCustomizedResources have value empty set and
    attribute announcement has the noAnnouncement value.";
```

6.3.71 Group dial plan common behaviour

```
groupDialPlanCommonBhv BEHAVIOUR
    DEFINED AS "This managed object class represents the treatment to be received by centrex
    users within a centrex group when they dial digits on the terminating equipment. This
    includes specific treatments such as routing to operators or activation codes for
    supplementary services as well as the specific translation table for the centrex group.";
```

6.3.72 Group dial plan create behaviour

```
groupDialPlanCreateBhv BEHAVIOUR
    DEFINED AS "A group dial plan instance is created as a subordinate of an existing instance of
    centrex group profile. Creating an instance of group dial plan generates an object creation
    notification.";
```

6.3.73 Group dial plan delete behaviour

```
groupDialPlanDeleteBhv BEHAVIOUR
    DEFINED AS "Deleting an instance of group dial plan generates an object deletion
    notification.";
```

6.3.74 Multiple subscriber number supplementary service common behaviour

```
msnSupplServCommonBhv BEHAVIOUR
    DEFINED AS "According to ETS 300 050: The MSN supplementary service provides the possibility
    for assigning multiple numbers (not necessarily consecutive) to a single public or private
    interface. This enables the selection of one or more multiple distinct terminals attached to
    the same interface.";
```

6.3.75 Multiple subscriber number supplementary service create behaviour

```
msnSupplServCreateBhv BEHAVIOUR
    DEFINED AS "The MSN supplementary service is only valid for single line, standard subscribers
    connected to a basic access port. The MSN supplementary service shall be created prior to
    assignment of the second CCITT Recommendation E.164 DN to attribute assocMemberE164Directory
    Numbers of the analogue ISDN customer profile.";
```

6.3.76 Multiple subscriber number supplementary service delete behaviour

```
msnSupplServDeleteBhv BEHAVIOUR
    DEFINED AS "The MSN supplementary service object class may not be deleted unless attribute
    assocMemberE164DirectoryNumbers of the analogue ISDN customer profile contains two or more
    CCITT Recommendation E.164 DN.";
```

6.3.77 Primary rate access common behaviour

```
primaryRateAccessCommonBhv BEHAVIOUR
    DEFINED AS "The ISDN primary rate access port object class consists of up to 30 B-channels of
    64 kbit/s for transfer of information and data and 1 D-channel of 64 kbit/s for signalling
    and data transfer (30 B + D).";
```

6.3.78 Primary rate access for customer administration behaviour

```
primaryRateAccessForCustomerAdminBhv BEHAVIOUR
    DEFINED AS "The D-channel activation attribute specifies whether layer two has to be held
    active.";
```

6.3.79 Supplementary service create behaviour

```
supplServCreateBhv BEHAVIOUR
    DEFINED AS "An instance of this supplementary service is created as a subordinate of an
    existing instance of customer profile. Creating an instance of this supplementary service
    generates an object creation notification.";
```

6.3.80 Supplementary service delete behaviour

```
supplServDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this supplementary service is deleted the owner objects
    participating in a group relationship with this instance have to update their relationship
    attributes. Deleting an instance of this object class generates an object deletion
    notification.";
```

6.3.81 Telephony common behaviour

```
telephonyCommonBhv BEHAVIOUR
    DEFINED AS "The telephony service provides speech transmission at an audio bandwidth of
    3,1 kHz. The communication is bi-directional, with both directions continuously and
    simultaneously active during the speech phase. The network may use processing techniques
    appropriate for speech such as analogue transmission, echo cancellation and low bit-rate
    encoding.";
```

6.3.82 Telephony create behaviour

```
telephonyCreateBhv BEHAVIOUR
    DEFINED AS "An instance of this teleservice is created as a subordinate of an existing
    instance of customer profile.

    Creating an instance of this teleservice generates an object creation notification.";
```

6.3.83 Telephony delete behaviour

```
telephonyDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this teleservice is deleted the member objects participating
    in a group relationship with this instance have to update their relationship attributes.
    Deleting an instance of this object class generates an object deletion notification.";
```

6.3.84 Teletex common behaviour

```
teletexCommonBhv BEHAVIOUR
    DEFINED AS "(Text from CCITT Recommendations F.200, I.241, § 2) The basic teletex service
    provides communication between equipment, which is used for the preparation, editing and
    printing of correspondence. A basic level of compatibility is provided between any two
    teletex terminal equipment's both nationally and internationally so that they may communicate
    formatted documents composed of character-coded information to each other.";
```

6.3.85 Teletex create behaviour

```
teletexCreateBhv BEHAVIOUR
    DEFINED AS "An instance of this teleservice is created as a subordinate of an existing
    instance of customer profile.

    Creating an instance of this teleservice generates an object creation notification.";
```

6.3.86 Teletex delete behaviour

```
teletexDeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this teleservice is deleted the member objects participating
    in a group relationship with this instance have to update their relationship attributes.
    Deleting an instance of this object class generates an object deletion notification.";
```

6.3.87 Telefax group 4 common behaviour

```
telefaxG4CommonBhv BEHAVIOUR
    DEFINED AS "(Text from CCITT Recommendations F.184, I.241, § 3) Telefax group 4 is an
    international service enabling subscribers to exchange office correspondence in the form of
    documents containing facsimile coded information automatically via the ISDN.

    The telefax group 4 service provides a basic level of compatibility between all terminals
    participating in the service. It offers bi-directional communication between two users via
    the ISDN using 64 kbit/s digital signals over the B-channel.

    The basic element of the correspondence between users is the page which is the smallest unit
    of text treated as an entity. No restrictions shall exist concerning the operator procedures
    for generation of the text or the position of the text within the reproducible area.";
```

6.3.88 Telefax group 4 create behaviour

```
telefaxG4CreateBhv BEHAVIOUR
    DEFINED AS "An instance of this teleservice is created as a subordinate of an existing
    instance of customer profile.

    Creating an instance of this teleservice generates an object creation notification.";
```

6.3.89 Telefax group 4 delete behaviour

```
telefaxG4DeleteBhv BEHAVIOUR
    DEFINED AS "When an instance of this teleservice is deleted the member objects participating
    in a group relationship with this instance have to update their relationship attributes.

    Deleting an instance of this object class generates an object deletion notification.";
```

6.3.90 Terminal portability supplementary service common behaviour

```
termPortabilitySupplServiceCommonBhv BEHAVIOUR
    DEFINED AS "This supplementary service allows a user engaged in an active call to adjourn
    communication by an appropriate signalling procedure and resume the call at a later time.";
```

6.3.91 Three party supplementary service common behaviour

```
threePartyCommonBhv BEHAVIOUR
    DEFINED AS "This service enables a user to establish a three-way conversation, i.e. a
    simultaneous communication between the user and two other parties.";
```

6.4 Definition of attributes

6.4.1 Access channel and rate

```
accessChannelAndRate ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.AccessChannelAndRate;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 1};
```

6.4.2 Acting role

```
actingRole ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.ActingRole;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 2};
```

6.4.3 Advice of charge activation

```
adviceOfChargeActivation ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.AdviceOfChargeActivation;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        adviceOfChargeActivationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether the service is available for all calls
            automatically or on a per call basis.";;
REGISTERED AS {attribute 3};
```

6.4.4 Announcement

```
announcement ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.Announcement;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 4};
```

6.4.5 Associated default DN

```
assocDefaultDN ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.IsdnNb;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 5};
```

6.4.6 Associated consoles

```
assocConsoles ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocConsolesBhv BEHAVIOUR
            DEFINED AS "The associated consoles attribute is a set-valued attribute pointing to a
            set of instances of the centrex console profile object class playing the member-role.
            It conforms to the definition of the group relationship attribute 'member' in CCITT
            Recommendation X.732.";;
REGISTERED AS {attribute 6};
```

6.4.7 Associated member access channels

```
assocMemberAccessChannels ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocMemberAccessChannelsAttBhv BEHAVIOUR
            DEFINED AS "The associated member access channels attribute is a set-valued attribute
            pointing to a set of instances of the access channel object class playing the member-
            role. It conforms to the definition of the group relationship attribute 'member' in
            CCITT Recommendation X.732.";;
REGISTERED AS {attribute 7};
```

6.4.8 Associated member access ports

```
assocMemberAccessPorts ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocMemberAccessPortsAttBhv BEHAVIOUR
            DEFINED AS "The associated member access ports attribute is a set-valued attribute
            pointing to a set of instances of the access port object class playing the member-
            role. It conforms to the definition of the group relationship attribute 'member' in
            CCITT Recommendation X.732.";;
REGISTERED AS {attribute 8};
```

6.4.9 Associated member customized services

```
assocMemberCustomizedServices ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocMemberCustomizedServicesAttBhv BEHAVIOUR
            DEFINED AS "The associated member customized services attribute is a set-valued
            attribute pointing to a set of instances of the customized service object class
            playing the member-role. It conforms to the definition of the group relationship
            attribute 'member' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 9};
```

6.4.10 Associated member CCITT Recommendation E.164 directory numbers

```
assocMemberE164DirectoryNumbers ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocMemberDirectoryNumbersAttBhv BEHAVIOUR
            DEFINED AS "The associated member CCITT Recommendation E.164 DN attribute is a set-
            valued attribute pointing to a set of instances of the CCITT Recommendation E.164 DN
            object class playing the member-role. It conforms to the definition of the group
            relationship attribute 'member' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 10};
```

6.4.11 Associated member supplementary services

```
assocMemberSupplServices ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":member;
    BEHAVIOUR
        assocMemberSupplServicesBhv BEHAVIOUR
            DEFINED AS "The associated member supplementary services attribute is a set-valued
            attribute pointing to a set of instances of the supplementary service object class
            playing the member-role. It conforms to the definition of the group relationship
            attribute 'member' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 11};
```

6.4.12 Associated owner customer profiles

```
assocOwnerCustomerProfiles ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":owner;
    BEHAVIOUR
        assocOwnerCustomerProfileAttBhv BEHAVIOUR
            DEFINED AS "The associated owner customer profiles attribute is a set-valued
            attribute pointing to a set of instances of the customer profile object class playing
            the owner-role. It conforms to the definition of the group relationship attribute
            'owner' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 12};
```

6.4.13 Associated owner customized resources

```
assocOwnerCustomizedResources ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":owner;
    BEHAVIOUR
        assocOwnerCustomizedResourcesAttBhv BEHAVIOUR
            DEFINED AS "The associated owner customized resources attribute is a set-valued
            attribute pointing to a set of instances of the customized resources object class
            playing the owner-role. It conforms to the definition of the group relationship
            attribute 'owner' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 13};
```

6.4.14 Associated owner customized services

```
assocOwnerCustomizedServices ATTRIBUTE
    DERIVED FROM "CCITT Recommendation X.721:1992":owner;
    BEHAVIOUR
        assocOwnerCustomizedServicesBhv BEHAVIOUR
            DEFINED AS "The associated owner customized services attribute is a set-valued
            attribute pointing to a set of instances of the customized service object class
            playing the owner-role. It conforms to the definition of the group relationship
            attribute 'owner' in CCITT Recommendation X.732.";;
REGISTERED AS {attribute 14};
```

6.4.15 Completion of calls to busy subscriber recall mode

```
callCompletionBusyRecallMode ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallCompletionBusyRecallMode;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callCompletionBusyRecallModeBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether a completion of calls to busy subscribers recall
            is offered to the termination which activated the service or to all compatible
            terminations.";;
REGISTERED AS {attribute 15};
```

6.4.16 Call forwarding active notification

```
callForwardActiveNotification ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallForwardActiveNotification;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callForwardActiveNotificationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether the served user is to be notified that
            callforwarding is active.";;
REGISTERED AS {attribute 16};
```

6.4.17 Call forwarding calling notification

```
callForwardCallingNotification ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallForwardCallingNotification;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callForwardCallingNotificationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether the calling user is to be notified that his call
            has been forwarded.";;
REGISTERED AS {attribute 17};
```

6.4.18 Call forwarding release information

```
callForwardReleaseInformation ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallForwardReleaseInformation;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callForwardReleaseInformationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether served user releases number information to
            forwarded-to user.";;
REGISTERED AS {attribute 18};
```

6.4.19 Call forwarding served notification

```
callForwardServedNotification ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallForwardServedNotification;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callForwardServedNotificationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether served user receives notification that a call has
            been forwarded.";;
REGISTERED AS {attribute 19};
```

6.4.20 Call ID restriction options

```
callIdRestrictionOptions ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallIdRestrictionOptions;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 20};
```

6.4.21 Call waiting calling notification

```
callWaitingCallingNotification ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CallWaitingCallingNotification;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        callWaitingCallingNotificationBhv BEHAVIOUR
            DEFINED AS "Flag indicating whether the calling user is to be notified that his call
            is waiting.";;
REGISTERED AS {attribute 21};
```

6.4.22 Channel rate

```
channelRate ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.ChannelRate;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 22};
```

6.4.23 Channel type

```
channelType ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.ChannelType;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 23};
```

6.4.24 Configuration

```
configuration ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.Configuration;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 24};
```

6.4.25 Closed user group barring

```
cugBarring ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CugBarring;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 25};
```

6.4.26 Closed user group data network ID

```
cugDataNetworkIdentification ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CugDataNetworkId;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 26};
```

6.4.27 Closed user group index

```
cugIndex ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CugIndex;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 27};
```

6.4.28 Closed user group interlock code

```
cugInterlockCode ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CugInterlockCode;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 28};
```

6.4.29 Closed user group network authorisation

```
cugNetworkAuthorizations ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.CugNetworkAuthorizations;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 29};
```

6.4.30 Customer profile ID

```
customerProfileId ATTRIBUTE
    DERIVED FROM identifyingName;
    BEHAVIOUR
        customerProfileIdAttBhv BEHAVIOUR
            DEFINED AS "The customer profile ID attribute is used to compose the RDN when naming
            an instance of the customer profile object class or its sub-classes.";;
REGISTERED AS {attribute 30}
```

6.4.31 Customized resources ID

```
customizedResourcesId ATTRIBUTE
    DERIVED FROM identifyingName;
    BEHAVIOUR
        customizedResourcesIdAttBhv BEHAVIOUR
            DEFINED AS "The customized resources ID attribute is used to compose the RDN when
            naming an instance of the customized resources object class.";;
REGISTERED AS {attribute 31};
```

6.4.32 Customized service ID

```
customizedServiceId ATTRIBUTE
    DERIVED FROM identifyingName;
    BEHAVIOUR
        customizesServiceIdAttBhv BEHAVIOUR
            DEFINED AS "The customized service ID attribute is used to compose the RDN when
            naming an instance of the customized service object class or its sub-classes.";;
REGISTERED AS {attribute 32};
```

6.4.33 D-channel layer 1 activation

```
dChannelLayer1Activation ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.D-ChannelActivation;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 33};
```

6.4.34 D-channel layer 2 activation

```
dChannelLayer2Activation ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.D-ChannelActivation;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 59};
```

6.4.35 Dialled codes list

```
dialledCodesList ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.DialledCodesList;
    MATCHES FOR SET-INTERSECTION, SET-COMPARISON;
    BEHAVIOUR
        dialledCodesListBhv BEHAVIOUR
            DEFINED AS "Defines the range of dialled digits which are to receive specific
            treatments within the centrex group. Examples include specific digits used to access
            attendants, external lines, emergency switchboards, etc., as well as the list of
            access and activation codes for supplementary service features used within the
            group.";;
REGISTERED AS {attribute 34};
```

6.4.36 CCITT Recommendation E.164 directory number

```
e164DirectoryNumber ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.E164DirectoryNumber;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 35};
```

6.4.37 CCITT Recommendation E.164 directory number ID

```
e164DirectoryNumberId ATTRIBUTE
    DERIVED FROM identifyingName;
    BEHAVIOUR
        e164DirectoryNumberIdAttBhv BEHAVIOUR
            DEFINED AS "The CCITT Recommendation E.164 DN ID attribute is used to compose the RDN
            when naming an instance of the CCITT Recommendation E.164 DN object class.";;
REGISTERED AS {attribute 36};
```

6.4.38 Establishment

```
establishment ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.Establishment;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 37};
```

6.4.39 Group dial plan ID

```
groupDialPlanId ATTRIBUTE
    DERIVED FROM identifyingName;
    BEHAVIOUR
        groupDialPlanIdAttBhv BEHAVIOUR
            DEFINED AS "The group dial plan ID attribute is used to compose the RDN when naming
            instances of the group dial plan object class.";;
REGISTERED AS {attribute 38};
```

6.4.40 Identifying name

```
identifyingName ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.NameType;
    MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {attribute 39};
```

6.4.41 Line characteristics

```
lineCharacteristics ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.LineCharacteristics;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 40};
```

6.4.42 Line signalling

```
lineSignalling ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.LineSignalling;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 41};
```

6.4.43 Line test capability

```
lineTestCapability ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.LineTestCapability;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 42};
```

6.4.44 Maximum number of information channels

```
maxNumOfInfoChannels ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.MaxNb;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 43};
```

6.4.45 Maximum number of total calls

```
maxNumOfTotalCalls ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.MaxNb;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 44};
```

6.4.46 Maximum number of waiting calls

```
maxNumberOfWaitingCalls ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.MaxNumberOfWaitingCalls;
    MATCHES FOR EQUALITY, ORDERING;
    BEHAVIOUR
        maxNumberOfWaitingCallsBhv BEHAVIOUR
            DEFINED AS "The maximum number of calls that can be waiting.";;
REGISTERED AS {attribute 45};
```

6.4.47 Number of digits for call ID

```
numOfDigitsForCallId ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.NumOfDigitsForCallId;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 46};
```

6.4.48 No screening option

```
noScreeningOption ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.NoScreeningOption;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 58};
```

6.4.49 Number of digits for terminal ID

```
numOfDigitsForTerminalId ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.NumOfDigitsForTerminalId;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 47};
```

6.4.50 Number of digits not to transmit

```
numOfDigitsNotToTransmit ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.NumOfDigitsNotToTransmit;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 48};
```

6.4.51 Preferred closed user group identifier

```
preferredCugId ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.PreferredCugId;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 49};
```

6.4.52 Screen originating DN

```
screenOriginatingDN ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.ScreenOriginatingDN;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 50};
```

6.4.53 Subscriber category

```
subscriberCategory ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.SubscriberCategory;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 51};
```

6.4.54 Subscriber type

```
subscriberType ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.SubscriberType;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 52};
```

6.4.55 Symmetry

```
symmetry ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.Symmetry;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 53};
```

6.4.56 Telefax group 4 class

```
telefaxG4Class ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.TelefaxG4Class;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 54};
```

6.4.57 Teletex mode

```
teletexMode ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.TeletexMode;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 55};
```

6.4.58 Third wire equipment

```
thirdWireEquipment ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.ThirdWireEquipment;
    MATCHES FOR EQUALITY;
REGISTERED AS {attribute 56};
```

6.4.59 Translation table

```
translationTable ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModule.TranslationTable;
    MATCHES FOR SET-INTERSECTION, SET-COMPARISON;
    BEHAVIOUR
        translationTableBhv BEHAVIOUR
            DEFINED AS "Defines how calls are routed between extensions in the customer group. A
            sequence of dialled digits will translate to a PSTN number range for routing. These
            need to be mutually compatible. A $ is used as a wild card.";;
REGISTERED AS {attribute 57};
```

6.5 Name bindings

6.5.1 Access channel basic access

```
accessChannel-basicAccess NAME BINDING
    SUBORDINATE OBJECT CLASS        accessChannel;
    NAMED BY SUPERIOR OBJECT CLASS  basicAccess;
    WITH ATTRIBUTE                  "CCITT Recommendation M.3100:1992":cTPId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 1};
```

6.5.2 Access channel digital access

```
accessChannel-digitalAccess NAME BINDING
    SUBORDINATE OBJECT CLASS        accessChannel;
    NAMED BY SUPERIOR OBJECT CLASS  digitalAccess;
    WITH ATTRIBUTE                  "CCITT Recommendation M.3100:1992":cTPId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 2};
```

6.5.3 Access channel primary rate access

```
accessChannel-primaryRateAccess NAME BINDING
    SUBORDINATE OBJECT CLASS        accessChannel;
    NAMED BY SUPERIOR OBJECT CLASS  primaryRateAccess;
    WITH ATTRIBUTE                  "CCITT Recommendation M.3100:1992":cTPId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 3};
```

6.5.4 Access port managed element

```
accessPort-ManagedElement NAME BINDING
    SUBORDINATE OBJECT CLASS        accessPort AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS  "CCITT Recommendation M.3100:1992":managedElement;
    WITH ATTRIBUTE                  "CCITT Recommendation M.3100:1992":tTPId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE DELETES-CONTAINED-OBJECTS;
REGISTERED AS {nameBinding 4};
```

6.5.5 Customer profile managed element

```
customerProfile-ManagedElement NAME BINDING
    SUBORDINATE OBJECT CLASS        customerProfile AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS  "CCITT Recommendation M.3100:1992":managedElement;
    WITH ATTRIBUTE                  customerProfileId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE DELETES-CONTAINED-OBJECTS;
REGISTERED AS {nameBinding 5};
```

6.5.6 Centrex group profile centrex user profile

```
centrexGroupProfile-CentrexUserProfile NAME BINDING
    SUBORDINATE OBJECT CLASS        centrexUserProfile AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS  centrexGroupProfile;
    WITH ATTRIBUTE                  customerProfileId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE DELETES-CONTAINED-OBJECTS;
REGISTERED AS {nameBinding 6};
```

6.5.7 Centrex group profile centrex console profile

```
centrexGroupProfile-CentrexConsoleProfile NAME BINDING
    SUBORDINATE OBJECT CLASS        centrexConsoleProfile AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS  centrexGroupProfile;
    WITH ATTRIBUTE                  customerProfileId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
REGISTERED AS {nameBinding 7};
```

6.5.8 Customized resources customer profile

```
customizedResources-customerProfile NAME BINDING
    SUBORDINATE OBJECT CLASS        customizedResources;
    NAMED BY SUPERIOR OBJECT CLASS  customerProfile AND SUBCLASSES;
    WITH ATTRIBUTE                  customizedResourcesId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 8};
```

6.5.9 Customized service customer profile

```
customizedService-customerProfile NAME BINDING
    SUBORDINATE OBJECT CLASS        customizedService AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS  customerProfile AND SUBCLASSES;
    WITH ATTRIBUTE                  customizedServiceId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 9};
```

6.5.10 CCITT Recommendation E.164 directory number managed element

```
e164DirectoryNumber-managedElement NAME BINDING
    SUBORDINATE OBJECT CLASS        e164DN;
    NAMED BY SUPERIOR OBJECT CLASS  "CCITT Recommendation M.3100:1992":managedElement;
    WITH ATTRIBUTE                  e164DirectoryNumberId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 10};
```

6.5.11 Group dial plan

```
groupDialPlan-centrexGroupProfile NAME BINDING
    SUBORDINATE OBJECT CLASS        groupDialPlan;
    NAMED BY SUPERIOR OBJECT CLASS  centrexGroupProfile;
    WITH ATTRIBUTE                  groupDialPlanId;
    CREATE WITH-REFERENCE-OBJECT, WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {nameBinding 11};
```

6.6 ASN.1 defined types module

```
CustomerAdminModule {ccitt(0) identified-organization(4) etsi(0) customerAdministration(291)
                     informationModel(0) asn1Module(2) asn1DefinedTypesModule(0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS
    -- CCITT Recommendation X.711
        ObjectInstance
        FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) version1(1) protocol(3)}
    -- CCITT Recommendation X.721
        AdministrativeState,
        GroupObjects
        FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1};

informationModel           OBJECT IDENTIFIER ::= {ccitt(0) identified-organization(4) etsi(0)
                                                  customerAdministration(291)
                                                  informationModel(0)}
standardSpecificExtension  OBJECT IDENTIFIER ::= {informationModel standardSpecificExtension(0)}
managedObjectClass         OBJECT IDENTIFIER ::= {informationModel managedObjectClass       (3)}
package                    OBJECT IDENTIFIER ::= {informationModel package                  (4)}
parameter                  OBJECT IDENTIFIER ::= {informationModel parameter                (5)}
nameBinding                OBJECT IDENTIFIER ::= {informationModel nameBinding              (6)}
attribute                  OBJECT IDENTIFIER ::= {informationModel attribute                (7)}
```

```
AccessChannelAndRate            ::= SEQUENCE {
                                        userInformation     [1] ChannelType,
                                        signalling          [2] ChannelType}

ActingRole                      ::= ENUMERATED {
                                        balanced            (0),
                                        master              (1),
                                        slave               (2)}

AdviceOfChargeActivation        ::= INTEGER {
                                        allCalls            (0),
                                        perCall             (1)}

Announcement                    ::= INTEGER {
                                        noAnnouncement      (0),
                                        announcement1       (1),
                                        announcement2       (2)
                                        --   .
                                        --   .
                                        --   .
                                    }   -- has to be specified in a certain implementation

CallCompletionBusyRecallMode    ::= INTEGER {
                                        recallAll           (0),
                                        recallActivator     (1)}

CallForwardActiveNotification   ::= BOOLEAN

CallForwardCallingNotification  ::= INTEGER {
                                        no                  (0),
                                        yesWithoutNumber    (1),
                                        yesWithNumber       (2)}

CallForwardReleaseInformation   ::= BOOLEAN

CallForwardServedNotification   ::= BOOLEAN

CallIdRestrictionOptions        ::= SEQUENCE {
                                        mode        ENUMERATED {
                                                        permanent           (1),
                                                        temporary           (2)},
                                        default     ENUMERATED {
                                                        restricted          (1),
                                                        notRestr            (2)} OPTIONAL
                                            -- for temporary mode only
                                    }

CallWaitingCallingNotification  ::= BOOLEAN

ChannelRate                     ::= INTEGER

ChannelType                     ::= INTEGER {
                                        iSDN-B              (0),
                                        iSDN-D              (1),
                                        nonISDN             (2)}        -- extensions ffs

Configuration                   ::= ENUMERATED {
                                        pttopt              (1),
                                        multipt             (2),
                                        broadcast           (3)}

CugBarring                      ::= ENUMERATED {
                                        none                (0),
                                            -- no blocking of CUG calls
                                        inBarred            (1),
                                            -- Subscriber cannot receive calls from other members
                                            -- of his CUG. Incoming CUG traffic (to customer from
                                            -- switch) disabled.
                                        outBarred           (2)
                                            -- Subscriber cannot originate calls to other members
                                            -- of his CUG. Outgoing CUG traffic (from customer to
                                            -- switch) disabled.
                                    }

CugDataNetworkId                ::= DialledDigits (SIZE(4))
                                        -- this information is signalled during setup of a CUG
                                        -- call and serves (in conjunction with the
                                        -- cugInterlockCode) to uniquely identify the CUG in the
                                        -- international network. It can be thought of as the
                                        -- area code of the CUG.

CugIndex                        ::= DialledDigits (SIZE(2))
```

```
CugInterlockCode                ::= DialledDigits (SIZE(5))
                                        -- this information is signalled during setup of a CUG
                                        -- call and serves to uniquely identify the CUG in the
                                        -- national network. It can be thought of as the
                                        -- 'directory number' for the CUG.

CugNetAuth                      ::= ENUMERATED {
                                        ictraf              (0),
                                            -- Incoming calls from non-CUG members allowed
                                        ogtraf              (1)
                                            -- Calls to non-CUG members allowed. When these
                                            -- features are not assigned, only CUG intern traffic
                                            -- is possible.
                                    }

CugNetworkAuthorizations        ::= SET OF CugNetAuth

D-ChannelActivation             ::= ENUMERATED {
                                        deact               (0),    --link deactivated
                                        act1                (1),    --layer 1 maintained
                                        act2                (2)}    --layer 1 and 2 maintained

DetailedNb                      ::= SEQUENCE {
                                        incoming            INTEGER,
                                        outgoing            INTEGER,
                                        bothWay             INTEGER}

DialledCodesList                ::= SET OF SEQUENCE {
                                        code                DialledDigits,
                                        treatment           DigitTreatment}

DialledDigits                   ::= IA5String
    (FROM ("0"|"1"|"2"|"3"|"4"|"5"|"6"|"7"|"8"|"9"|"0"|"*"|"#"|"A"|"B"|"C"|"D"|"E"|"F"))

DigitTreatment                  ::= INTEGER {
                                        operator            (0),
                                        external            (1),
                                        emergency           (2),
                                        activationCode1     (3),
                                        accessCode1         (4),
                                        activationCode2     (5),
                                        accessCode2         (6)
                                        --.
                                        --.
                                        --.
                                    }

DirectoryNumberDigits           ::= DialledDigits (SIZE(16))

E164DirectoryNumber             ::= SEQUENCE {
                                        countryCode                 DialledDigits (SIZE(4))
                                                                        OPTIONAL,
                                        nationalSignificantNumber   SEQUENCE {
                                            nationalDestinationNumber   DialledDigits (SIZE(6))
                                                                            OPTIONAL,
                                            subscriberNumber            DialledDigits (SIZE(8))}}

Establishment                   ::= ENUMERATED {
                                        demand              (1),
                                        reserved            (2),
                                        permanent           (3)}

IsdnNb                          ::= DialledDigits

LineCharacteristics             ::= INTEGER {
                                        short               (0),
                                        long                (1)}

LineSignalling                  ::= INTEGER {
                                        dtmf                (0),    -- push button
                                        pulse               (1),    -- rotary
                                        both                (2)}

LineTestCapability              ::= BOOLEAN

MaxNb                           ::= CHOICE {
                                        detailed            [1] DetailedNb,
                                        total               [2] INTEGER}

MaxNumberOfWaitingCalls         ::= INTEGER (1..MAX)

NumOfDigitsForCallId            ::= INTEGER

NumOfDigitsForTerminalId        ::= INTEGER
```

```
NumOfDigitsNotToTransmit        ::= INTEGER

NameType                        ::= CHOICE {
                                        number              INTEGER,
                                        string              GraphicString}

PreferredCugId                  ::= CHOICE {
                                        notDefined          [0] NULL,
                                        defined             [1] CugIndex}

ScreenOriginatingDN             ::= BOOLEAN

SubscriberCategory              ::= INTEGER {
                                        standard            (0),
                                        coinBox             (1),
                                        mobile              (2),
                                        testEquipment       (3),
                                        operator            (4)}

SubscriberType                  ::= INTEGER {
                                        singleLine          (0),
                                        multiLinePBX        (1),
                                        multiLineNonPBX     (2),
                                        hotLine             (3)}

Symmetry                        ::= ENUMERATED {
                                        unidirectional      (1),
                                        bidirSymm           (2),
                                        bidirAsymm          (3)}

TelefaxG4Class                  ::= ENUMERATED {
                                        telefaxClassI       (1),
                                        telefaxClassII      (2),
                                        telefaxClassIII     (3)}

TeletexMode                     ::= ENUMERATED {
                                        virtualDialogueMode (1),
                                        processableMode     (2),
                                        mixedMode           (3)}

ThirdWireEquipment              ::= BOOLEAN

TranslationTable                ::= SET OF SEQUENCE {
                                        dialledNumLength    INTEGER (1..16),
                                        dialledNum          DialledDigits,
                                        actualNum           DialledDigits}

adminStateDefault           AdministrativeState         ::= unlocked
announcementDefault         Announcement                ::= noAnnouncement
cugBarringDefault           CugBarring                  ::= none
cugNetAuthDefault           CugNetworkAuthorizations    ::= {}
d-ChannelActivationDefault  D-ChannelActivation         ::= deact
defaultAssocMembAC          GroupObjects                ::= {}
defaultAssocMembAP          GroupObjects                ::= {}
defaultAssocMembCustServ    GroupObjects                ::= {}
defaultAssocMembE164DN      GroupObjects                ::= {}
defaultAssocMembSupplServ   GroupObjects                ::= {}
defaultAssocOwnerCustProf   GroupObjects                ::= {}
defaultAssocOwnerCustRes    GroupObjects                ::= {}
defaultAssocOwnerCustServ   GroupObjects                ::= {}
lineCharacteristicsDefault  LineCharacteristics         ::= short
lineSignallingDefault       LineSignalling              ::= dtmf
preferredCugIdDefault       PreferredCugId              ::= notDefined NULL
subscriberCategoryDefault   SubscriberCategory          ::= standard
subscriberTypeDefault       SubscriberType              ::= singleLine
thirdWireEquipmentDefault   ThirdWireEquipment          ::= FALSE

END -- of CustomerAdminModule
```

Annex A (informative): Reference list for used names

This annex contains the list of names used in clause 5 and clause 6.

A.1 Translation table for object classes (clauses 5 and 6)

Table A.1

Descriptive object class name	Formal object class name
Access Channel	accessChannel
Access Port	accessPort
Advice of Charge During Supplementary Service	adviceOfChargeDuring
Advice of Charge End Supplementary Service	adviceOfChargeEnd
Advice of Charge Setup	adviceOfChargeSetup
Analogue Access	analogueAccess
Analogue/ISDN Customer Profile	analogueIsdnCustomerProfile
Basic Access	basicAccess
Bearer Service	customizedBearerService
Call Forward on Busy Suppementary Service	callForwardBusy
Call Forward on No Reply Supplementary Service	callForwardNoReply
Call Forwarding Unconditional Supplementary Service	callForwardUnc
Call Hold Supplementary Service	callHold
Call Waiting Supplementary Service	callWaiting
Centrex Console Profile	centrexConsoleProfile
Centrex Group Profile	centrexGroupProfile
Centrex User Profile	centrexUserProfile
Circuit Mode 3,1 kHz Customized Bearer Service	circuitMode3100Hz
Circuit Mode 64 kbit/s Customized Bearer Service	circuitMode64kb
CLIP Supplementary Service	clipSupplService
CLIR Supplementary Service	clirSupplService
Closed User Group Supplementary Service	closedUserGroup
Completion of Calls to Busy Subs. Supplementary Service	callCompletionBusy
CUG Subscription Option Supplementary Service	cugSubscrOptSuplService
Customer Profile	customerProfile
Customized Resources	customizedResources
Customized Service	customizedService
Customized Supplementary Service	customizedSupplService
DDI Supplementary Service	ddiSupplService
Digital Access	digitalAccess
Directory Number	directoryNumber
CCITT Recommendation E.164 [5] Directory Number	e164DirectoryNumber
Group Dial Plan	groupDialPlan
Managed Element	managedElement
MSN Supplementary Service	msnSupplService
Primary Rate Access	primaryRateAccess
Teleservice	customizedTeleService
Telefax group 4 Teleservice	telefaxG4
Telephony 3,1 kHz Teleservice	telephony
Teletex Teleservice	teletex
Terminal Portability Supplementary Service	termPortabilitySupplService
Three Party Supplementary Service	threeParty

A.2 Translation table for attribute names (clauses 5 and 6)

Table A.2

Descriptive attribute names	Formal attribute names
Access Channel and Rate	accessChannelAndRate
Access Channel ID	cTPId
Access Port Identifier	tTPId
Acting Role	actingRole
Administrative State	administrativeState
Advice Of Charge Activation	adviceOfChargeActivation
Announcement	announcement
Assoc. Consoles	assocConsoles
Assoc. Default DN	assocDefaultDN
Assoc. Directory Numbers	assocMemberDirectoryNumbers
Assoc. Member Access Channels	assocMemberAccessChannels
Assoc. Member Access Ports	assocMemberAccessPorts
Assoc. Member Supplementary Services	assocMemberSupplServices
Assoc. Member E164 Directory Numbers	assocMemberE164DirectoryNumbers
Assoc. Owner Customer Profiles	assocOwnerCustomerProfile
Assoc. Owner Customized Resources	assocOwnerCustomizedResource
Assoc. Owner Customized Services	assocOwnerCustomizedServices
Assoc. Owner E164 Directory Numbers	assocOwnerE164DirectoryNumbers
Assoc. Services	assocMemberCustomizedServices
Assoc. Supplementary Services	assocMemberSupplServices
Assoc.Tele/Bearer Services	assocOwnerCustomizedServices
Call Completion Busy Recall Mode	callCompletionBusyRecallMode
Call Forward Active Notification	callForwardActiveNotification
Call Forward Calling Notification	callForwardCallingNotification
Call Forward Release Notification	callForwardReleaseInformation
Call Forward Served Notification	callForwardServedNotification
CallIdRestrictionOptions	callIdRestrictionOptions
Call Waiting Calling Notification	callWaitingCallingNotification
Channel Number	channelNumber
Channel Rate	channelRate
Channel Type	channelType
Configuration	configuration
Country Code	e164DirectoryNumber
CUG Index	cugIndex
CUG Interlock Code	cugInterlockCode
CUG Data Network Identification	cugDataNetworkIdentification
CUG Barring	cugBarring
Cug Network Authorizations	cugNetworkAuthorizations
Customer Profile ID	customerProfileId
Customized Resources ID	customizedResourcesId
Customized Service ID	customizedServicesId
D-Channel Activation	dChannelActivation
Dialled Codes List	dialledCodesList
Directory Number ID	directoryNumberId
CCITT Recommendation E.164 [5] DN	e164DirectoryNumber
CCITT Recommendation E.164 [5] DN Identifier	e164DirectoryNumberId
Establishment	establishment
Group Dial Plan ID	groupDialPlanId
Line Characteristics	lineCharacteristics
Line Signalling	lineSignalling
Line Test Capability	lineTestCapability

(continued)

Table A.2 (concluded)

Descriptive attribute names	Formal attribute names
MaxNumberOfInform.Chann	maxNumOfInfoChannels
Max Number Of Waiting Calls	maxNumberOfWaitingCalls
MaxNumberOfTotalCalls	maxNumOfTotalCalls
National Significant Num	e164DirectoryNumber
NumberOfDigitsForCallId	numOfDigitsForCallId
NumberOfDigitsForTerminalId	numOfDigitsForTermId
NumOfDigitsNotToTransmit	numOfDigitsNotToTransmit
Operational State	operationalState
Preferred Cug ID	preferredCugId
Screen Originating DN	screenOriginatingDN
Subscriber Category	subscriberCatagory
Subscriber Type	subscriberType
Symmetry	symmetry
Telefax Class	telefaxClass
Teletex Mode	teletexMode
Third Wire Equipment	thirdWireEquipment
Translation Table	translationTable

Annex B (informative): Candidates for standardization

This annex contains a collection of supplementary services which are candidates for standardization within ETSI.

B.1 Supplementary services managed object classes

B.1.1 Automatic line

```
automaticLine MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        autoLinePackage PACKAGE
            BEHAVIOUR
                automaticLineCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                autoLineDestDN                      GET-REPLACE,
                autoLineTimeout                     GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.2 Automatic recall

```
autoRecall MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        autoRecallPackage PACKAGE
            BEHAVIOUR
                autoRecallCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.3 Call pickup

```
callPickup MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        callPickupPackage PACKAGE
            BEHAVIOUR
                callPickupCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                cpuType                             GET-REPLACE,
                cpuIdentifier                       GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.4 Call transfer

```
callTransfer MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        callTransferPackage PACKAGE
            BEHAVIOUR
                callTransferCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                transFirstLeg                       GET-REPLACE,
                transSecondLeg                      GET-REPLACE,
                transCallDirection                  GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.5 Changed destination

```
changedDestination MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        changedDestPackage PACKAGE
            BEHAVIOUR
                changedDestinationCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                changeDestTreatment                GET-REPLACE,
                changeDN                           GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.6 Code calling

```
codeCalling MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        codeCallPackage PACKAGE
            BEHAVIOUR
                codeCallingCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                codeCallListSize                   GET-REPLACE,
                codeCallPairs                      GET-REPLACE ADD-REMOVE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.7 Incoming call barring

```
incomingCallBarring MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        icBarPackage PACKAGE
            BEHAVIOUR
                incomingCallBarringCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                icbCategoryList                    GET-REPLACE ADD-REMOVE,
                icbList                            GET-REPLACE ADD-REMOVE,
                icbTreatment                       GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.8 Malicious call indication

```
maliciousCallIndicate MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        malicCallIndicPackage PACKAGE
            BEHAVIOUR
                maliciousCallIndicateCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.9 Message waiting

```
messageWaiting MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        messageWaitingPackage PACKAGE
            BEHAVIOUR
                messageWaitingCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                messageType                        GET-REPLACE,
                messageIndicate                    GET-REPLACE;
    REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.10 Outgoing call barring

```
outgoingCallBarring MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        ocBarPackage PACKAGE
            BEHAVIOUR
                outgoingCallBarringCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                ocbCategory                         GET-REPLACE,
                ocbTreatment                        GET-REPLACE;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.11 Reminder call

```
reminderCall MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        reminderCallPackage PACKAGE
            BEHAVIOUR
                reminderCallCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
            ATTRIBUTES
                reminderTime                        GET-REPLACE,
                reminderProg                        GET-REPLACE;
    REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.1.12 Repeat call

```
repeatCall MANAGED OBJECT CLASS
    DERIVED FROM customizedSupplementaryService;
    CHARACTERIZED BY
        repeatCallPackage PACKAGE
            BEHAVIOUR
                repeatCallCommonBhv,
                supplServiceCcreateBhv,
                supplServiceDeleteBhv;
        REGISTERED AS <package id>;;
REGISTERED AS <object id>;
```

B.2 Attribute descriptions

B.2.1 Auto line destination DN

Directory number to which all calls from an automatic line are routed.

```
autoLineDestDN       ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.AutomaticLineDestDN;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.2 Auto line timeout

Time period in seconds during which subscriber can override automatic call setup by dialling manually.

```
autoLineTimeout ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.AutomaticLineTimeout;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS <attribute id>;
```

B.2.3 Change destination treatment

Type of treatment which is to apply for changed destination facility.

```
changeDestTreatment ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.ChangeDestTreat;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.4 Change DN

Destination directory number of call subject to Changed Destination treatment.

```
changeDN ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.ChangeDN;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.5 Code call list size

Maximum no of entries in code calling list for that DN.

```
codeCallListSize ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.CodeCallListSize;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS <attribute id>;
```

B.2.6 Code call pairs

Pairs of numbers, each pair containing a short code and its associated sequence of dialled digits.

```
codeCallPairs ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.CodeCallPairs;
    MATCHES FOR EQUALITY, SET INTERSECTION, SET COMPARISON;
REGISTERED AS <attribute id>;
```

B.2.7 Call pickup identifier

Identifier for a call pickup group.

```
cpuIdentifier ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.CpuIdentifier;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.8 Call pickup type

Type of call pickup.

```
cpuType ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.CpuType;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.9 ICB category list

Type of ICB which is to apply for a subscriber.

```
icbCategoryList ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.IcbCategoryList;
    MATCHES FOR EQUALITY, SET INTERSECTION, SET COMPARISON;
REGISTERED AS <attribute id>;
```

B.2.10 ICB treatment

Type of treatment for incoming call barring.

```
icbTreatment ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.IcbTreatment;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.11 Message indicate

Method of indicating that a message is waiting.

```
messageIndicate ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.MessageIndicate;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.12 Message type

Type of message which is allowed for a subscriber.

```
messageType ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.MessageType;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.13 OCB category

Number referring to the category of calls which are to be barred.

```
ocbCategory ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.OcbCategory;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.14 OCB treatment

Type of treatment for outgoing call barring.

```
ocbTreatment ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.OcbTreatment;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.15 Reminder program

Program of reminder calls.

```
reminderProg ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.ReminderProg;
    MATCHES FOR EQUALITY;
REGISTERED AS <attribute id>;
```

B.2.16 Reminder time

Time at which Reminder Call is required.

```
reminderTime ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.ReminderTime;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS <attribute id>;
```

B.2.17 Secondary number triplet

Triplets of numbers where each triplet consists of a directory number, a cadence code and a bypass category. The cadence code determines which of four ringing cadences to apply to calls to that DN. The bypass category determines which features on the primary DN are to be bypassed when calling this secondary DN.

```
secondaryNumberTriplet ATTRIBUTE
    WITH ATTRIBUTE SYNTAX CustomerAdminModules.DNCadenceTriplet;
    MATCHES FOR EQUALITY, SET INTERSECTION, SET COMPARISON;
REGISTERED AS <attribute id>;
```

B.3 Behaviour definitions

B.3.1 Automatic line behaviour

```
automaticLineCommonBhv BEHAVIOUR
    DEFINED AS "Allows a subscriber to arrange for all outgoing calls to be routed directly to a
    pre-determined DN. A timeout period may be included for dialling ordinary calls.";
```

B.3.2 Auto recall behaviour

```
autoRecallCommonBhv BEHAVIOUR
    DEFINED AS "Allows the subscriber to place a call to the last DN that called the subscriber.
    If unsuccessful, the switch will try again when it determines that both parties are free.";
```

B.3.3 Call pickup behaviour

```
callPickupCommonBhv BEHAVIOUR
    DEFINED AS "Allows the subscriber to answer a call ringing at another DN. Varieties include
    directed pickup, where the user enters a code followed by the DN from which the call is to be
    picked up, or group pickup, where the user enters a code to answer any call ringing on a DN
    in the pickup group.";
```

B.3.4 Call transfer behaviour

```
callTransferCommonBhv BEHAVIOUR
    DEFINED AS "Allows a subscriber, in conversation with one party, to transfer the call to a
    third party. Restrictions can be placed on the type of call which can be transferred and the
    destination of the transfer.";
```

B.3.5 Change destination behaviour

```
changedDestinationCommonBhv BEHAVIOUR
    DEFINED AS "When applied, callers dialling the DN receive either a CD announcement or are
    connected to a CD operator. Several versions exist depending on the type of number change and
    availability of recorded information.";
```

B.3.6 Code call behaviour

```
codeCallingCommonBhv BEHAVIOUR
    DEFINED AS "Allows the subscriber to use a short code to set up a call rather than dialling
    the full DN.";
```

B.3.7 Incoming call barring behaviour

```
incomingCallBarringCommonBhv BEHAVIOUR
    DEFINED AS "Restricts the range of calls that may be received at a subscriber's equipment.
    Barring may be applied to a list of DNs, or to a type of call.";
```

B.3.8 Malicious call indication behaviour

```
maliciousCallIndicateCommonBhv BEHAVIOUR
    DEFINED AS "Allows the subscriber to indicate to the switch that the call should be traced.";
```

B.3.9 Message waiting behaviour

```
messageWaitingCommonBhv BEHAVIOUR
    DEFINED AS "Message Waiting facility includes voice messaging service capability and message
    waiting indicator, in the form of a visual indication or a stutter dial tone. With this
    activated, the subscriber knows when they have received a message.";
```

B.3.10 Outgoing call barring behaviour

```
outgoingCallBarringCommonBhv BEHAVIOUR
    DEFINED AS "Restricts the range of calls that can be made from the subscriber's CPE.";
```

B.3.11 Reminder call behaviour

```
reminderCallCommonBhv BEHAVIOUR
    DEFINED AS "Enables the subscriber to request a single reminder call or a program of reminder
    calls.";
```

B.3.12 Repeat call behaviour

```
repeatCallCommonBhv BEHAVIOUR
    DEFINED AS "Allows the subscriber to repeat a call setup attempt using an access code rather
    than redialling the required DN. There are two options - repeat last number dialled or repeat
    last number stored.";
```

B.4 ASN.1 defined types module

```
CustomerAdminModules

DEFINITIONS ::=

BEGIN

AutomaticLineDestDN             ::= DirectoryNumberDigits
```

```
AutomaticLineTimeout            ::= GeneralizedTime

ChangeDestTreat                 ::= INTEGER {
                                        automaticCD         (0),
                                        operatorCD          (1),
                                        opIntercept         (2)}

ChangeDN                        ::= DirectoryNumberDigits

CodeCallListSize                ::= INTEGER (1..4095)

CodeCallPairs                   ::= SET OF SEQUENCE {
                                        code                NumericString,
                                        number              DirectoryNumberDigits}

CpuIdentifier                   ::= INTEGER (0..255)

CpuType                         ::= INTEGER {
                                        directed            (0),
                                        group               (1),
                                        both                (2)}

IcbCategoryList                 ::= SET OF INTEGER {
                                        allcalls            (0),
                                        list                (1),
                                        anonymous           (2),
                                        forwarded           (3),
                                        pSTN                (4)}

IcbList                         ::= SET OF DirectoryNumberDigits

IcbTreatment                    ::= INTEGER {
                                        permanent           (0),
                                        prearranged         (1)}

MessageIndicate                 ::= INTEGER {
                                        visibleIndicator    (0),
                                        stutterDialTone     (1)}

MessageType                     ::= INTEGER {
                                        returnCallRequest   (0),
                                        userMessage         (1)}

OcbCategory                     ::= INTEGER {
                                        allCalls            (0),
                                        allExEmergency      (1),
                                        allExEmergAndFault  (2),
                                        national            (3),
                                        international       (4),
                                        operator            (5),
                                        suppServices        (6),
                                        premiumRateServices (7),
                                        natAndInt           (8),
                                        natIntAndOp         (9),
                                        natIntAndSup        (10),
                                        natIntOpAndSup      (11),
                                        intAndOp            (12),
                                        intAndSup           (13),
                                        intOpAndSup         (14),
                                        opAndSup            (15),
                                        prsAndInt           (16),
                                        adultAndChat        (17)} (0..31)

OcbTreatment                    ::= INTEGER {
                                        subStopped          (0),
                                        permanent           (1),
                                        prearranged         (2)}

ReminderProg                    ::= INTEGER {
                                        singleCall          (0),
                                        monday              (1),
                                        tuesday             (2),
                                        wednesday           (3),
                                        thursday            (4),
                                        friday              (5),
                                        saturday            (6),
                                        sunday              (7),
                                        monToFri            (8),
                                        allWeek             (9)}

ReminderTime                    ::= GeneralizedTime

END -- of CustomerAdminModules
```

Annex C (informative): Examples of use of the customer administration model

This annex is aimed at illustrating the use of object classes of the information model defined for customer administration at the NE/OS interface.

It consists of four examples. For each example, a short text describes the customer subscription in terms of network and service resources. Then some explanation is given on how this particular subscription is translated in terms of instances of the customer administration object model.

This explanation is illustrated by a drawing showing the instanciation of the model for the given configuration. Instances of object classes are represented by circles. Containment relationships are represented by dotted lines and association relationships by solid lines.

C.1 Example 1

The first example is a very simple one consisting of a single line customer configuration, using one analogue access port, one directory number and no services.

This configuration will be represented by three object instances, as illustrated in figure C.1:

- one instance of analogueISDNCustomerProfile, called CP;
- one instance of analogueAccess, called AA;
- one instance of e164DN, called DN.

CP and DN on one hand, CP and AA on the other hand, are related through the use of relationship attributes. All these instances are contained in an instance of Managed Element representing the local exchange where the customer is connected.

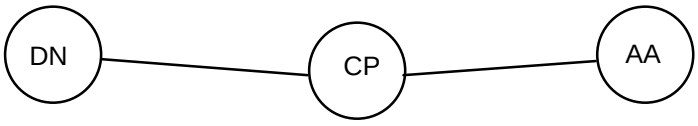


Figure C.1

C.2 Example 2

The second example consists of a single line customer configuration, using one basic ISDN access port and one directory number, and supporting the Circuit Mode 3,1 kHz Audio bearer service and the Telefax G4 teleservice. Moreover the Call Forwarding Busy supplementary service is subscribed.

This configuration will be represented by six object instances, as illustrated in figure C.2:

- one instance of analogueISDNCustomerProfile, called CP;
- one instance of basicAccess, called BA;
- one instance of e164DN, called DN;
- one instance of circuitMode3100HzAudio, called BS;
- one instance of telefaxG4, called TS;
- one instance of callForwardBusy, called CF.

As all the services defined are applicable to both the access port and the directory number provisioned for the customer configuration, there is no need for instantiating the Customized Resources object class. The Customer Profile object instance constitutes a single point of access to the customer configuration and binds all together the various service and resource object instances assigned to the customer, either by means of relationship attributes (for DN and BA), or by means of containment relationships (for BS, TS and CF).

Moreover the Call Forwarding Busy supplementary service instance is associated with both instances of bearer service and teleservice.

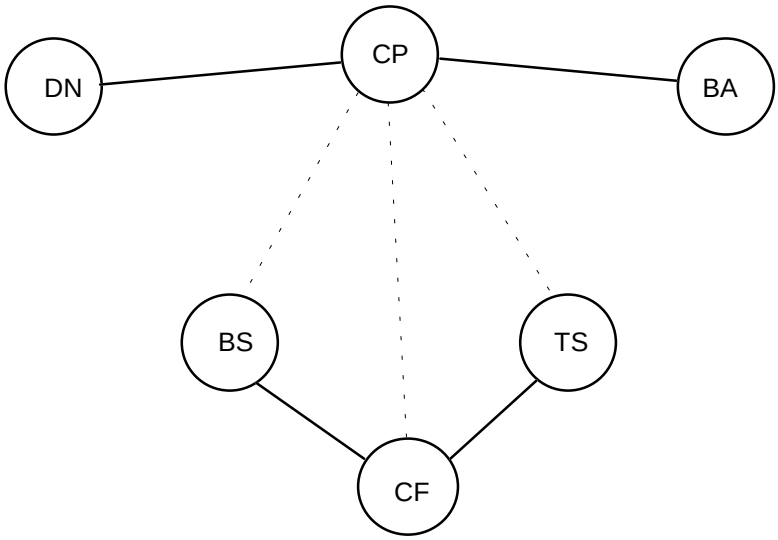


Figure C.2

C.3 Example 3

The third example consists of a single line customer configuration, using one basic ISDN access port and three directory numbers, and supporting the Circuit Mode 3,1 kHz Audio bearer service and the Telefax G4 teleservice. All three directory numbers are assigned to the single access port thanks to the Multiple Subscriber Number supplementary service. Moreover, the Call Forwarding Busy supplementary service is subscribed for one of the directory numbers.

This configuration will be represented by ten object instances, as illustrated in figure C.3:

- one instance of analogueISDNCustomerProfile, called CP;
- one instance of basicAccess, called BA;
- three instances of e164DN, called DN1, DN2, DN3;
- one instance of circuitMode3100HzAudio, called BS;
- one instance of telefaxG4, called TS;
- one instance of callForwardBusy, called CF;
- one instance of msnSupplService, called MSN;
- one instance of customizedResources, called CR.

The Multiple Subscriber Number supplementary service is applicable to all three directory numbers and to the single access port provisioned for the customer configuration. Hence no Customized Resources object is instantiated for it.

On the contrary, the Call Forwarding Busy supplementary service is only applicable to one directory number, say DN1. In that case a Customized Resources object instance is needed to relate the CF instance to the DN1 instance.

Moreover, CF and MSN supplementary service instances are associated with both instances of bearer service and teleservice.

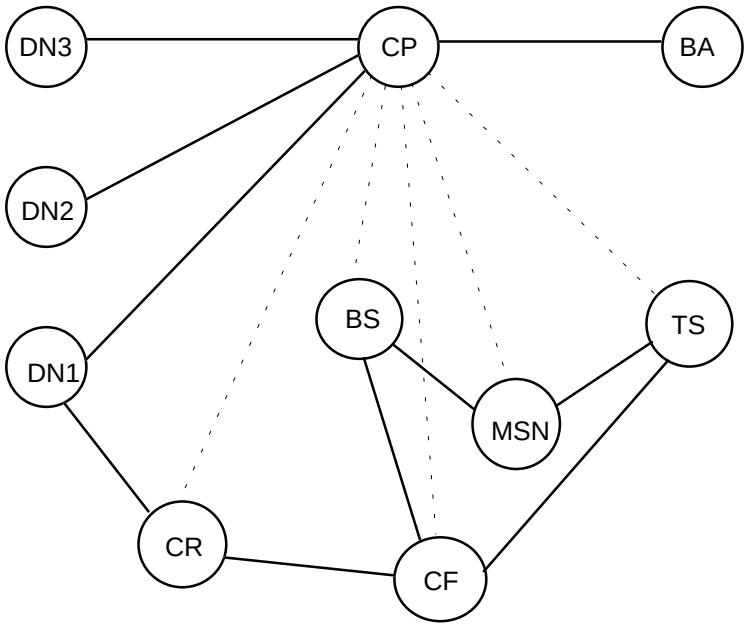


Figure C.3

C.4 Example 4

The fourth example consists of a multiline customer configuration, using three basic ISDN access ports (called BA1 BA2, BA3) and four directory numbers (called DN1, DN2, DN3, DN4), and supporting the Circuit Mode 3,1 kHz Audio bearer service. Each access port is related to one directory number (BA1 to DN1, BA2 to DN2), except the third one (BA3) which is related to two directory numbers (DN3, DN4) thanks to the Multiple Subscriber Number supplementary service. Moreover the Call Forwarding Busy supplementary service is subscribed for two directory numbers (DN1 and DN2).

This configuration will be represented by fifteen object instances, as illustrated in figure C.4.

To represent the relationships between access ports and directory numbers, three instances of Customized Resources object class are created: CR1 relates DN1 and BA1, CR2 relates DN2 and BA2, CR3 relates DN3, DN4 and BA3. Moreover a Multiple Subscriber Number supplementary service object instance is also created and related to CR3.

As the Call Forwarding Busy supplementary service is only applicable to directory numbers DN1 and DN2, another Customized Resources object instance called CR4 is created to relate the CF instance to the DN1 and DN2 instances.

Moreover, CF and MSN supplementary service instances are associated with the bearer service instance.

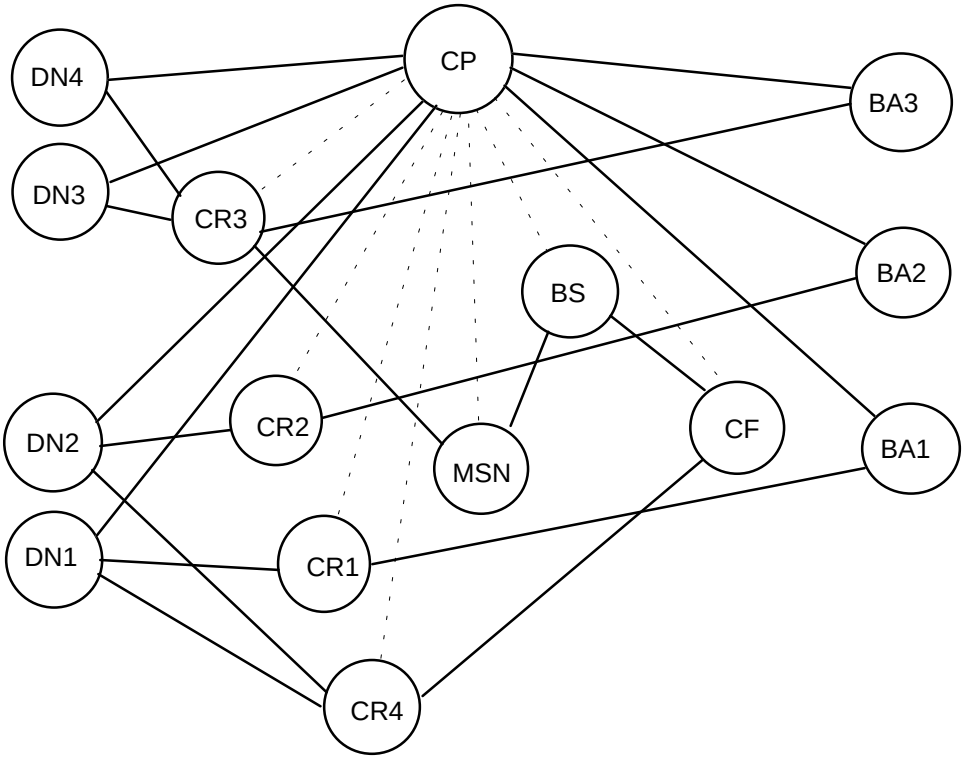


Figure C.4

History

Document history	
January 1995	First Edition
March 1996	Converted into Adobe Acrobat Portable Document Format (PDF)