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SPECIFICATIONS OF SIGNALLING SYSTEM No. 7

STAGES 2 AND 3 DESCRIPTION FOR THE Q3 INTERFACE – CUSTOMER ADMINISTRATION – INTEGRATED SERVICES DIGITAL NETWORK (ISDN) SUPPLEMENTARY SERVICES

ITU-T Recommendation Q.824.2

(Previously “CCITT Recommendation”)

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation Q.824.2 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 17th of october 1995.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

CONTENTS

SUMMARY

The purpose of this Recommendation is to provide the Stages 2 and 3 description of the Q3 interface between a local exchange and the Telecommunications Management Network (TMN) for the support of configuration management functions in support of customer administration of ISDN supplementary services. Customer administration is a management activity that the network operator performs in order to exchange with the customer all the customer related management data and functions required to offer a telecommunications service, and to exchange with the network all the customer related management data and functions necessary for the network to produce that telecommunications service. This Recommendation supports the administration of the customer configuration in the local exchange by the TMN. This Recommendation is part of a series of Recommendations. In this Recommendation the ISDN supplementary service specific managed objects are defined.

Recommendation Q.824.2

STAGES 2 AND 3 DESCRIPTION FOR THE Q3 INTERFACE – CUSTOMER ADMINISTRATION – INTEGRATED SERVICES DIGITAL NETWORK (ISDN) SUPPLEMENTARY SERVICES

(Geneva, 1995)

1 Introduction

1.1 Purpose and Scope

Customer administration is a management activity that the network operator performs in order to exchange with the customer all the customer related management data and functions required to offer a telecommunications service and to exchange with the network all the customer related management data and functions necessary for the network to produce that telecommunications service.

The purpose of this Recommendation is to provide the ISDN supplementary service Stage 2 and 3 description of the Q3 interface between a local exchange and the Telecommunications Management Network (TMN) for the support of configuration management functions.

The Q3 interface is the TMN interface between network elements or Q-adapters which interface to Operations Systems (OSs) without mediation and between OSs and mediation devices as described in Recommendation M.3100.

1.2 Cross-reference

This Recommendation is based on the Stage 1 management service description given in the M.3000-Series Recommendations including Recommendation M.3400. This Recommendation also provides the Stage 2 and 3 descriptions for handling the Customer Administration for the ISDN supplementary service based on the service description provided in the I.250-Series Recommendations and based on the common Stage 2 and 3 descriptions given in Recommendation Q.824.0. The information model provided by this Recommendation may be used for the Customer Administration purposes either over a Q3 interface or over the ISDN UNI as described in Recommendation Q.942.

1.3 Application

The management information included in this Recommendation may be exchanged by implementations of the Common Management Information Service Element (CMISE). The Transaction-Oriented class of OAM&P applications is supported in this Recommendation by defining object classes, their attributes, and their relationships. The protocol suites are given in Recommendations Q.811 and Q.812. No special requirements are identified.

1.4 General overview

1.4.1 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:

1) Entity Relationship Model showing the relationship of the different managed objects. The E-R diagrams illustrate the intended way of applying the model. However the E-R diagrams do not show all possible relationships supported by the model. The E-R diagrams show relationships in which managed objects may participate. Instances of a class or a subclass may not be eligible to participate in the indicated relationship. In case of containment this means that an alternate name-binding will exist; in relationships implemented via pointers the pointer value will be null if an instance cannot or does not participate in the relationship.

2) Inheritance Hierarchy showing how managed objects are derived from each other (i.e. the different paths of inherited characteristics of the different managed objects).

3) 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 GDMO templates and ASN.1 type definitions are the relevant information for the implementation of this Recommendation. See Figures 1 to 3.

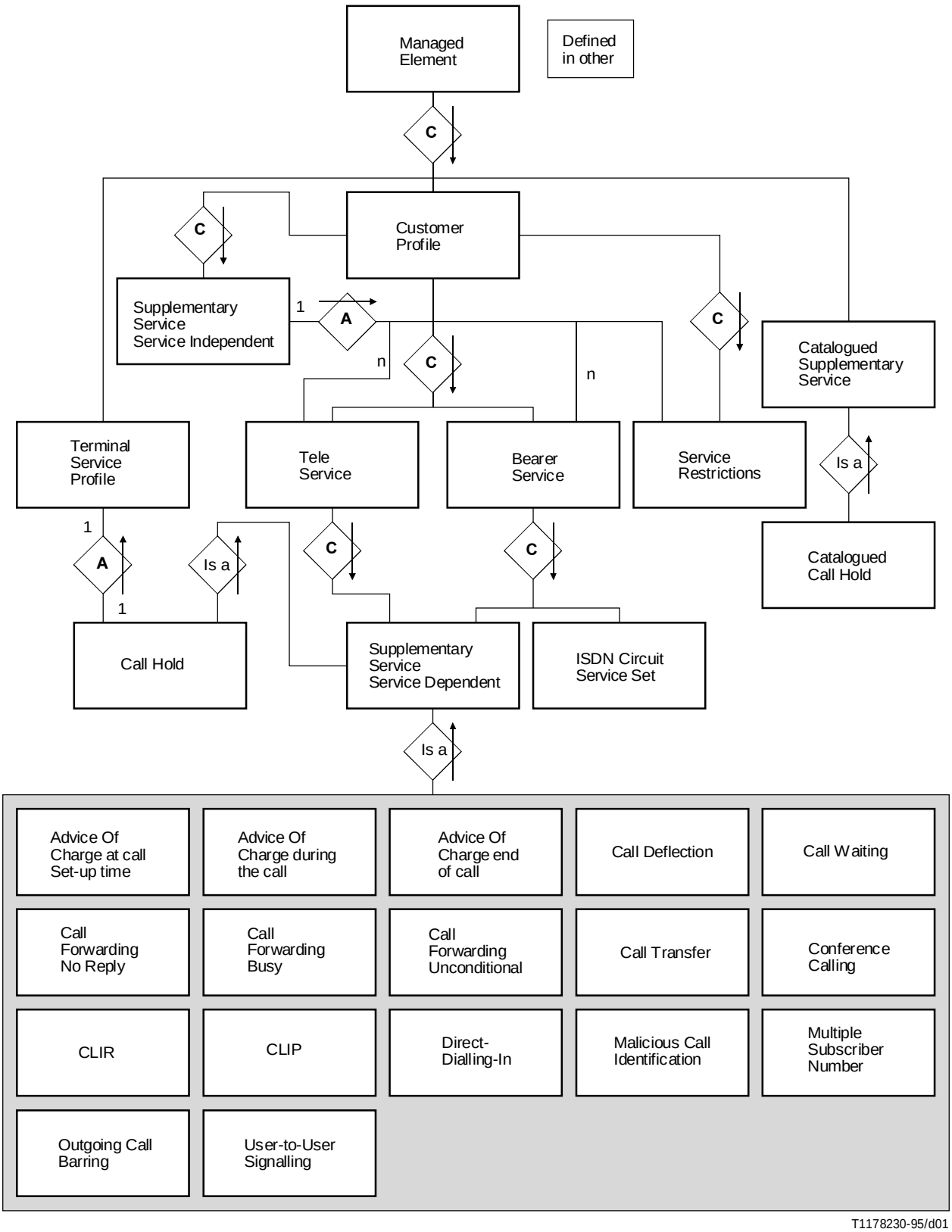


FIGURE 1/Q.824.2

Entity-relationship diagram

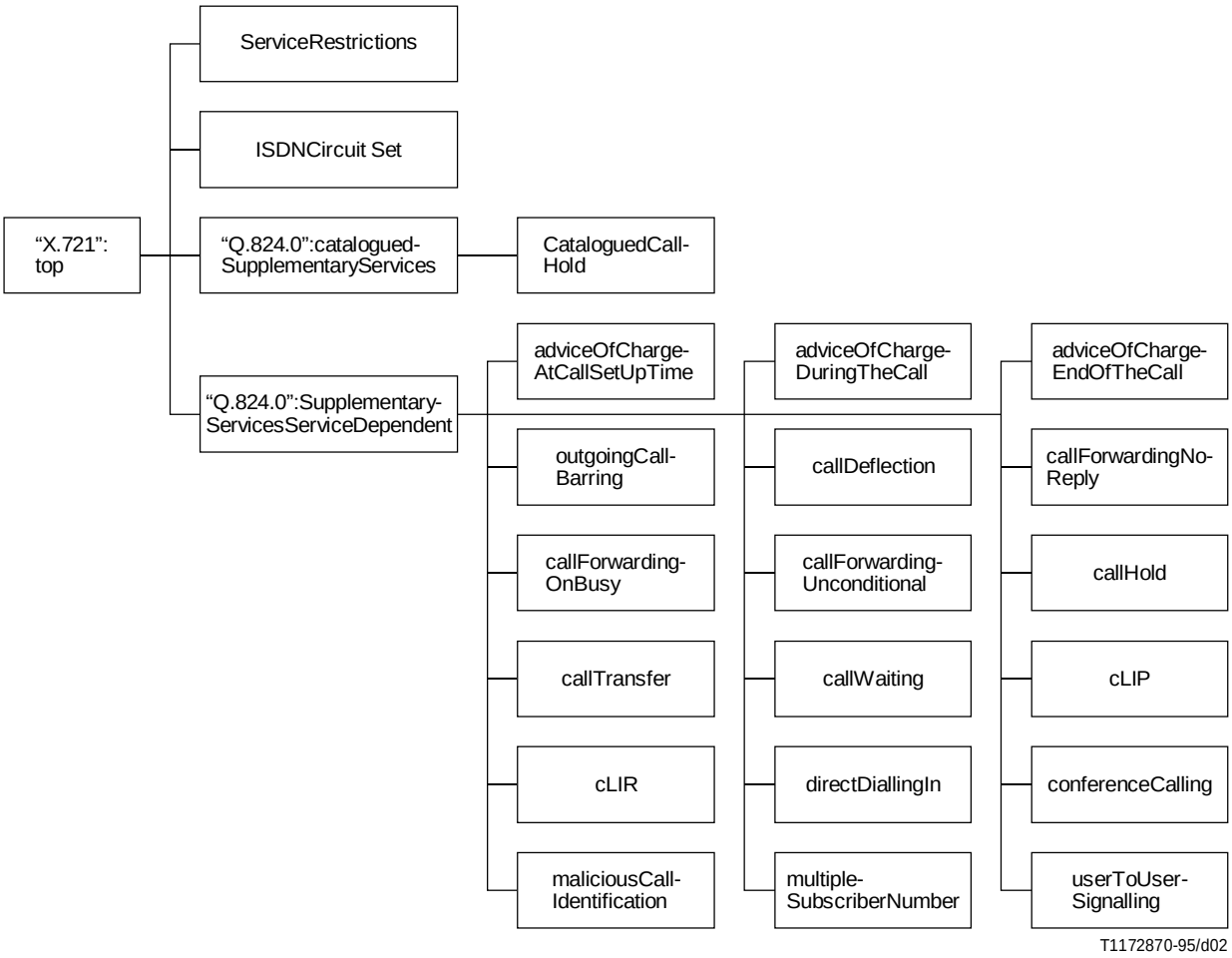


FIGURE 2/Q.824.2

Inheritance hierarchy

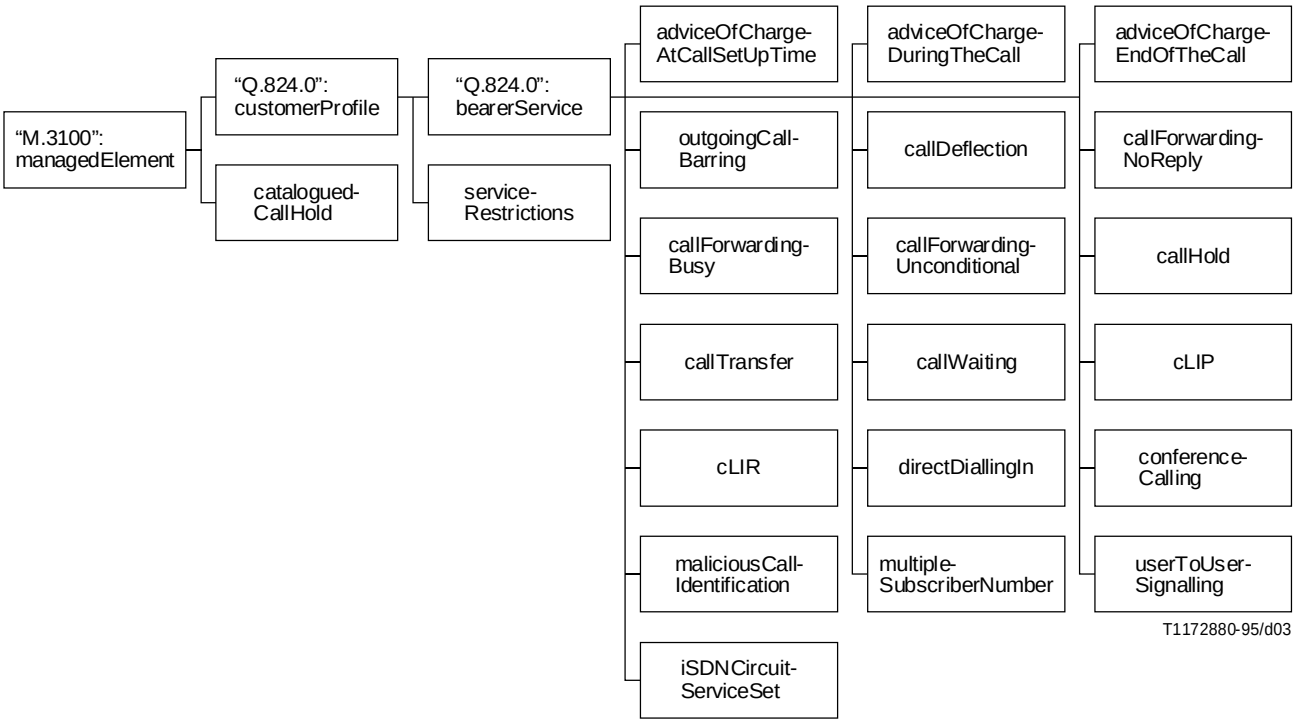
1.5 Managed object naming and attribute syntax

Throughout this Recommendation, all attributes are named according to the following guidelines:

– The name of an attribute is composed of the name of an object class followed by the string "Ptr" if and only if the attribute value is intended to identify a specific object class.

– If an attribute value is intended to identify different object classes, a descriptive name is given to that attribute and a description is provided in the attribute behaviour.

– The name of an attribute is composed of the name of an object class followed by the string "Id" if and only if the attribute value is intended to identify the name of the object class holding that attribute.



NOTE – The indicated naming hierarchy includes reusable name-bindings defined in other Recommendations.

FIGURE 3/Q.824.2

Naming hierarchy

2 References

The following Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- CCITT Recommendation E.164 (1991), *Numbering plan for the ISDN era*.
- CCITT Recommendation I.250 (1988), *Definition of supplementary services*.
- CCITT Recommendation I.251.1 (1992), *Direct-Dialling-In*.
- CCITT Recommendation I.251.2 (1992), *Multiple Subscriber Number*.
- CCITT Recommendation I.251.3 (1992), *Calling Line Identification Presentation*.
- CCITT Recommendation I.251.4 (1992), *Calling Line Identification Restriction*.
- CCITT Recommendation I.251.7 (1992), *Malicious Call Identification*.
- CCITT Recommendation I.252.1 (1988), *Call Transfer (CT)*.
- CCITT Recommendation I.252.2 (1992), *Call Forwarding Busy*.
- CCITT Recommendation I.252.3 (1992), *Call Forwarding No Reply*.
- CCITT Recommendation I.252.4 (1992), *Call Forwarding Unconditional*.

– CCITT Recommendation I.253.1 (1990), *Call Waiting (CW) supplementary service*.

– CCITT Recommendation I.253.2 (1992), *Call Hold*.

– CCITT Recommendation I.254.1 (1988), *Conference Calling (CONF).*

– CCITT Recommendation I.254.2 (1992), *Three-Party Supplementary Service*.

– CCITT Recommendation I.255.1 (1992), *Closed User Group*.

– CCITT Recommendation I.255.5 (1992), *Outgoing Call Barring*.

– ITU-T Recommendation I.256.2a (1993), *Advice Of Charge: charging information at call set-up time (AOC-S).*

– ITU-T Recommendation I.256.2b (1993), *Advice Of Charge: charging information during the call (AOC-D).*

– ITU-T Recommendation I.256.2c (1993), *Advice Of Charge: charging information at the end of the call (AOC-E).*

– CCITT Recommendation I.257.1 (1992), *User-to-User Signalling*.

– CCITT Recommendation M.3010 (1992), *Principles for a telecommunications management network*.

– CCITT Recommendation M.3020 (1992), *TMN interface specification methodology*.

– ITU-T Recommendation M.3100 (1995), *Generic network information model*.

– CCITT Recommendation M.3400 (1992), *TMN management functions*.

– ITU-T Recommendation Q.811 (1993), *Lower layer protocol profiles for the Q3 interface*.

– ITU-T Recommendation Q.812 (1993), *Upper layer protocol profiles for the Q3 interface*.

– ITU-T Recommendation Q.824.0 (1995), *Stages 2 and 3 description for the Q3 Interface – Customer administration – Common information*.

– ITU-T Recommendation X.283 (1993), *Elements of management information related to the OSI network layer.*

– CCITT Recommendation X.700 (1992), *Management framework for Open Systems Interconnection (OSI) for CCITT applications*.

– CCITT Recommendation X.701 (1992), *Information technology – Open Systems Interconnection – System management overview*.

– CCITT Recommendation X.710 (1991), *Common management information service definition for CCITT applications.*

– CCITT Recommendation X.711 (1991), *Common management information protocol specification for CCITT applications*.

– CCITT Recommendation X.720 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Management information model.*

– CCITT Recommendation X.721 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information*.

– CCITT Recommendation X.722 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects*.

– ITU-T Recommendation X.723 (1993), *Information technology – Open Systems Interconnection – Structure of management information: Generic management information*.

– ITU-T Recommendation Q.735, Stage 3 description for community of interest supplementary services using SS No. 7.

  clause 1 (1993), *Closed User Group*.

  clause 3 (1993), *Multi-level precedence and preemption*.

– ITU-T Recommendation Q.755 (1993), *Signalling System No. 7 protocol tests*.

3 ISDN supplementary service managed object classes

3.1 Generic services

3.1.1 ISDN Circuit Service Set

iSDNCircuitServiceSet MANAGED OBJECT CLASS

DERIVED FROM "CCITT Rec. X.721": top;

CHARACTERIZED BY

iSDNCircuitServiceSetPkg PACKAGE

BEHAVIOUR

iSDNCircuitServiceSetBhv BEHAVIOUR
DEFINED AS "This object class represents the list of simple supplementary services available for any circuit bearer service. A simple supplementary service is one which requires only one attribute to subscribe to it. For these simple services there will never be any supplementary service subclass. Instances of this class are contained under a bearer service.";;

ATTRIBUTES
iSDNCircuitSetId GET SET-BY-CREATE
supplementaryServiceThreePartyService GET-REPLACE,
calledPartySubAddressInfoTransfer GET-REPLACE;

NOTIFICATIONS
"CCITT Rec. X.721": attributeValueChange,
"CCITT Rec. X.721": objectCreation,
"CCITT Rec. X.721": objectDeletion;;;

CONDITIONAL PACKAGES

callReferenceBusyLimitPkg PRESENT IF "if restricting the max numbers of call reference is enforced.",

compatibilityInfoPkg PRESENT IF "if supported per bearer service basis",

contentionPkg PRESENT IF "supported basic rate class 1 Equipment";

REGISTERED AS {cAISDNSSObjectClass 1};

3.1.2 Service Restrictions

Instances of this object class may be contained in any Bearer Service object, Bearer Services

serviceRestrictions MANAGED OBJECT CLASS

DERIVED FROM "CCITT Rec. X.721": top;

CHARACTERIZED BY

serviceRestrictionsPkg PACKAGE

BEHAVIOUR

serviceRestrictionsBhv BEHAVIOUR
DEFINED AS "This object class includes attributes that impose some degree of restriction upon subscriber services.";;

ATTRIBUTES
serviceRestrictionsId GET SET-BY-CREATE
outgoingCallsBarred REPLACE-WITH-DEFAULT
DEFAULT VALUE CAISDNSSModule.false GET-REPLACE
incomingCallsBarred REPLACE-WITH-DEFAULT
DEFAULT VALUE CAISDNSSModule.false GET-REPLACE;

NOTIFICATIONS
"CCITT Rec. X.721": attributeValueChange,
"CCITT Rec. X.721": objectCreation,
"CCITT Rec. X.721": objectDeletion;;;

CONDITIONAL PACKAGES
interExchangeCarrierPkg PRESENT IF "multiple Inter Exchange Carriers are supported.";

REGISTERED AS {cAISDNSSObjectClass 2};

3.2 Supplementary services

3.2.1 Advice Of Charge At Call Set-Up Time

adviceOfChargeAtCallSetUpTime MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

adviceOfChargeAtCallSetUpTimePkg PACKAGE

BEHAVIOUR

adviceOfChargeAtCallSetUpTimeBhv BEHAVIOUR

DEFINED AS "This service (described in I.256.2a) 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.";;

ATTRIBUTES

adviceOfChargeActivation GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 3};

3.2.2 Advice Of Charge During The Call

adviceOfChargeDuringTheCall MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

adviceOfChargeDuringTheCallPkg PACKAGE

BEHAVIOUR

adviceOfChargeDuringTheCallBhv BEHAVIOUR

DEFINED AS "This service (described in I.256.2b) 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.";;

ATTRIBUTES

adviceOfChargeActivation GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 4};

3.2.3 Advice Of Charge End Of The Call

adviceOfChargeEndOfTheCall MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

adviceOfChargeEndOfTheCallPkg PACKAGE

BEHAVIOUR

adviceOfChargeEndOfTheCallBhv BEHAVIOUR

DEFINED AS "This service (described in I.256.2c) 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.";;

ATTRIBUTES

adviceOfChargeActivation GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 5};

3.2.4 Call Deflection

callDeflection MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callDeflectionPkg PACKAGE

BEHAVIOUR

callDeflectionBhv BEHAVIOUR

DEFINED AS "This service enables the subscriber to respond to an incoming call by requesting redirection of that call to another subscriber according to I.252.5.";;

ATTRIBUTES

deflectingNumberDelivery	**GET-REPLACE,**
deflectingNumberNotification	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 6};

3.2.5 Call Forwarding Busy

callForwardingBusy MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callForwardingBusyPkg PACKAGE

BEHAVIOUR

callForwardingBusyBhv BEHAVIOUR

DEFINED AS "This service (described in I.252.2) 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.";;

ATTRIBUTES

callForwardActiveNotification	**GET-REPLACE,**
callForwardCallingNotification	**GET-REPLACE,**
callForwardReleaseNotification	**GET-REPLACE,**
callForwardServedNotification	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 7};

3.2.6 Call Forwarding No Reply

callForwardingNoReply MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callForwardingNoReplyPkg PACKAGE

BEHAVIOUR

callForwardingNoReplyBhv BEHAVIOUR

DEFINED AS "This service (described in I.252.3) 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.";;

ATTRIBUTES

callForwardActiveNotification	**GET-REPLACE,**
callForwardCallingNotification	**GET-REPLACE,**
callForwardReleaseNotification	**GET-REPLACE,**
callForwardServedNotification	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 8};

3.2.7 Call Forwarding Unconditional

callForwardingUnconditional MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callForwardingUnconditionalPkg PACKAGE

BEHAVIOUR

callForwardingUnconditionalBhv BEHAVIOUR

DEFINED AS "This service (described in I.252.4) 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.";;

ATTRIBUTES

callForwardActiveNotification	**GET-REPLACE,**
callForwardCallingNotification	**GET-REPLACE,**
callForwardReleaseNotification	**GET-REPLACE,**
callForwardServedNotification	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 9};

3.2.8 Call Hold

This service may be assigned to individual subscribers by containment in either an instance of the Terminal Service Profile managed object class or an instance of one of the Services managed object classes (excluding packet switched bearer services because this service only applies to circuit switched services). This service can also be assigned to the combination of TSP/DN/BS through the use of the conditional package containing a pointer to an instance of the Terminal Service Profile object class.

callHold MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callHoldPkg PACKAGE

BEHAVIOUR

callHoldBhv BEHAVIOUR

DEFINED AS "The callHold object class is a class of managed objects that represents instances of sets of characteristics for the Call Hold supplementary service described in I.253.2.";;;;

CONDITIONAL PACKAGES

callHoldOptionsPkg PRESENT IF "the Administration supports these options which are customizable on a per instance of this supplementary service.",

terminalServiceProfileAssociationPkg PRESENT IF "callHold is assigned to a TSP/DN/BS combination.",

callHoldNotificationPkg PRESENT IF "the Administration supports this option which is customizable on a per instance of this supplementary service.";

REGISTERED AS {cAISDNSSObjectClass 10};

3.2.9 Call Transfer

NOTE – This definition is based on a Stage 1 without an approved Stage 3.

callTransfer MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callTransferPkg PACKAGE

BEHAVIOUR

callTransferBhv BEHAVIOUR

DEFINED AS "This service allows a subscriber in conversation with another party, to transfer the call to a third party. Restrictions can be placed on the transfer destination and the type of calls that can be transferred according to I.252.1.";;

ATTRIBUTES

transferProcedure GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 11};

3.2.10 Call Waiting

callWaiting MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

callWaitingPkg PACKAGE

BEHAVIOUR

callWaitingBhv BEHAVIOUR

DEFINED AS "This service (described in I.253.1) 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.";;

ATTRIBUTES

callWaitingCallingNotification GET-REPLACE,
maxNumberOfWaitingCalls GET-REPLACE;;;

CONDITIONAL PACKAGES

activationPkg PRESENT IF "supported by Administration.",

calledUserInBandNotificationPkg PRESENT IF "supported by Administration.";

REGISTERED AS {cAISDNSSObjectClass 12};

3.2.11 Calling Line Identification Presentation (CLIP)

cLIP MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

cLIPPkg PACKAGE

BEHAVIOUR

cLIPBhv BEHAVIOUR

DEFINED AS "This supplementary service (described in I.251.3) 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.";;

ATTRIBUTES

noRestrictionsAllowed GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 13};

3.2.12 Calling Line Identification Restriction (CLIR)

cLIR MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

cLIRPkg PACKAGE

BEHAVIOUR

cLIRBhv BEHAVIOUR

DEFINED AS "This supplementary service (described in I.251.4) 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.";;

ATTRIBUTES

callIdRestrictionOption GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 14};

3.2.13 Conference Calling

conferenceCalling MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

conferenceCallingPkg PACKAGE

BEHAVIOUR

conferenceCallingBhv BEHAVIOUR

DEFINED AS "This service enables the subscriber to set up a conference call according to I.254.1.";;

ATTRIBUTES

maxNumberOfPorts GET-REPLACE,
defaultNumberOfPorts GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 15};

3.2.14 Direct-Dialling-In

directDiallingIn MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

directDiallingInPkg PACKAGE

BEHAVIOUR

directDiallingInBhv BEHAVIOUR

DEFINED AS "This supplementary service enables a user to call directly via a public ISDN to a user on a private ISDN by use of the public ISDN numbering plan as described in I.251.1.";;;;

CONDITIONAL PACKAGES

digitsOptionPkg PRESENT IF "if supported by Administration";

REGISTERED AS {cAISDNSSObjectClass 16};

3.2.15 Malicious Call Identification

NOTE – This definition is based on a Stage 1 without an approved Stage 3.

maliciousCallIdentification MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

maliciousCallIdentificationPkg PACKAGE

BEHAVIOUR

maliciousCallIdentificationBhv BEHAVIOUR

DEFINED AS "This supplementary service allows a subscriber to start up the tracing of the malicious call originator according to I.251.7.";;

ATTRIBUTES

invocationTime	**GET-REPLACE,**
automaticInvocation	**GET-REPLACE,**
callingPartySubaddressRegistration	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 17};

3.2.16 Multiple Subscriber Number (MSN)

multipleSubscriberNumber MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

multipleSubscriberNumberPkg PACKAGE

BEHAVIOUR

multipleSubscriberNumberBhv BEHAVIOUR

DEFINED AS "The MSN supplementary service provides the possibility for assigning multiple numbers (not necessarily consecutive) to a single public or private interface as described in I.251.2. 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 the least significant digit up to the full ISDN number as defined in E.164. 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.";;

ATTRIBUTES

assocDefaultDN	**GET-REPLACE;;;**

CONDITIONAL PACKAGES

networkOptionsPkg PRESENT IF "if supported by Administration.";

REGISTERED AS {cAISDNSSObjectClass 18};

3.2.17 Outgoing Call Barring

NOTE – This definition is based on a Stage 1 without an approved Stage 3.

outgoingCallBarring MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

outgoingCallBarringPkg PACKAGE

BEHAVIOUR

outgoingCallBarringBhv BEHAVIOUR

DEFINED AS "This service restricts the range of calls that can be made from the subscribers CPE according to I.255.5.";;

ATTRIBUTES

outgoingCallBarringCategory	**GET-REPLACE,**
outgoingCallBarringTreatment	**GET-REPLACE,**
codeWord	**REPLACE,**
activationStatus	**GET,**
activationOption	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass 19};

3.2.18 Three-Party Service

This supplementary service is characterized by a single attribute in the iSDNCircuitServiceSet object named "supplementaryServiceThreePartyService".

3.2.19 User-to-User Signalling

userToUserSignalling MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceDependent;

CHARACTERIZED BY

userToUserSignallingPkg PACKAGE

BEHAVIOUR

userToUserSignallingBhv BEHAVIOUR

DEFINED AS "This service allows an ISDN subscriber to send/receive a limited amount of information to/from another ISDN subscriber over the signalling channel associated with their call according to I.257.1.";;

ATTRIBUTES

userToUserSignallingServiceCategory GET-REPLACE;;;

REGISTERED AS {cAISDNSSObjectClass 20};

4 Catalogued supplementary services

4.1 Catalogued Call Hold

cataloguedCallHold MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0": cataloguedSupplementaryService;

CHARACTERIZED BY

cataloguedCallHoldPkg PACKAGE

BEHAVIOUR

cataloguedCallHoldBhv BEHAVIOUR

DEFINED AS "The catalogued Call Hold object class is a class of managed objects that represents characteristics of the Call Hold service that are applicable to all customers on the switch that have subscribed to Call Hold. This class also provides the ability for an Administration to set characteristics for Call Hold and provide this service to all customers without the need for individual subscription to the service. This universal assignment is accomplished through the use of the perSwitchAssignmentCallHoldPkg. Additional characteristics applicable to the switch-wide assignment may be provided with the CallHoldOptions package, if the Administration supports these options.";;;;

CONDITIONAL PACKAGES

optionalGuardTimerPkg PRESENT IF "The Administration supports releasing calls to free up switch resources",

perSwitchAssignmentCallHoldPkg PRESENT IF "Call Hold is assigned to all subscribers on the switch and the Administration supports these options.";

REGISTERED AS {cAISDNSSObjectClass 20};

5 Package templates

5.1 Activation

activationPkg PACKAGE
ATTRIBUTES
activationCapability REPLACE-WITH-DEFAULT DEFAULT VALUE
CAISDNSSModule.true GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 1};

5.2 Called User In-Band Notification

```
calledUserInBandNotificationPkg PACKAGE
    ATTRIBUTES
        calledUserInBandNotification                    GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 2};
```

5.3 Call Hold Notification

```
callHoldNotificationPkg  PACKAGE
    ATTRIBUTES
        callHoldNotificationToHeldParty                 GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 3};
```

5.4 Call Hold Option

```
callHoldOptionsPkg  PACKAGE
    ATTRIBUTES
        limitOfReservedChannels                         GET-REPLACE,
        callHoldBChannelReservationRelease              GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 4};
```

5.5 Call Reference Busy Limit

```
callReferenceBusyLimitPkg  PACKAGE
    ATTRIBUTES
        callReferenceBusyLimit                          GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 5};
```

5.6 Compatibility Information

```
compatibilityInfoPkg  PACKAGE
    ATTRIBUTES
        lowLayerCompatibilityInfoTransfer               GET-REPLACE,
        highLayerCompatibilityInfoTransfer              GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 6};
```

5.7 Contention

```
contentionPkg  PACKAGE
   ATTRIBUTES
        contentionForIncomingCalls                      GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 7};
```

5.8 Digits Option

```
digitsOptionPkg  PACKAGE
    ATTRIBUTES
        numOfDigitsNotToTransmit                        GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 8};
```

5.9 Inter-exchange Carrier

```
interExchangeCarrierPkg  PACKAGE
    ATTRIBUTES
        prohibitICSelection                             GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 9};
```

5.10 Network Option

```
networkOptionsPkg  PACKAGE
    ATTRIBUTES
        numOfDigitsForCallId                            GET-REPLACE,
        numOfDigitsForTerminalIdentifier                GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 10};
```

5.11 Optional Guard Time

optionalGuardTimerPkg PACKAGE
ATTRIBUTES
callHoldOptionalGuardTimer GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 11};

5.12 Per-Switch Assignment Call Hold

perSwitchAssignmentCallHoldPkg PACKAGE
ATTRIBUTES
limitOfReservedChannels GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 12};

5.13 Terminal Service Profile Association

terminalServiceProfileAssociationPkg PACKAGE
ATTRIBUTES
terminalServiceProfilePtr GET-REPLACE;
REGISTERED AS {cAISDNSSPackage 13};

6 Attribute templates

This clause contains the ASN.1 definitions for all attributes in the described object classes. These definitions identify the function of the attributes and their valid characteristics, such as their valid values, inter-dependencies, read/write constraints, etc. The attributes are identified by their ASN.1 descriptors.

6.1 Activation Capability

activationCapability ATTRIBUTE

WITH ATTRIBUTE SYNTAX CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR

activationCapabilityBhv BEHAVIOUR

DEFINED AS "The value of this attribute indicates whether the subscriber is given the capability to activate and deactivate the ISDN Call Waiting service. When the value of this boolean attribute is TRUE, the subscriber has the capability. When the value is FALSE, the subscriber does not have the capability.";;

REGISTERED AS {cAISDNSSAttribute 1};

6.2 Activation Option

activationOption ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.ActivationOption ;

MATCHES FOR EQUALITY;

BEHAVIOUR

activationOptionBhv BEHAVIOUR

DEFINED AS "This attribute controls the procedures of activating the outgoing call barring supplementary service as described in I.255.5. The services may be activated/deactivated by either the subscriber (Normal Procedure) or the operator (Exceptional Procedure).";;

REGISTERED AS {cAISDNSSAttribute 2};

6.3 Activation Status

activationStatus ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.ActivationStatus;
MATCHES FOR EQUALITY;
BEHAVIOUR
activationStatusBhv BEHAVIOUR
DEFINED AS "This attribute controls the status of the outgoing call barring supplementary service as described in I.255.5. The services may be active or inactive.";;
REGISTERED AS {cAISDNSSAttribute 3};

6.4 Advice Of Charge Activation

adviceOfChargeActivation ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.AdviceOfChargeActivation;
MATCHES FOR EQUALITY;
BEHAVIOUR
adviceOfChargeActivationBhv BEHAVIOUR
DEFINED AS "This attribute controls the method of which cumulative charging information during the call are sent to the user: for all calls or on a per call basis. The charge information are related to the charges incurred on the network to which the served user is attached AssocDefaultDN.";;
REGISTERED AS {cAISDNSSAttribute 4};

6.5 Associate Default Directory Number

assocDefaultDN ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.AssocDefaultDN;
MATCHES FOR EQUALITY;
BEHAVIOUR
assocDefaultDNBhv BEHAVIOUR
DEFINED AS "This attribute specifies the default directory number for the ISDN supplementary service MSN.";;
REGISTERED AS {cAISDNSSAttribute 5};

6.6 Automatic Invocation

automaticInvocation ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
automaticInvocationBhv BEHAVIOUR
DEFINED AS "This attribute controls the activation of Malicious Call Identification so that calls that are not answered will be traced automatically as described in I.255.7.";;
REGISTERED AS {cAISDNSSAttribute 6};

6.7 Call Holding Notification To Held Party

callHoldNotificationToHeldParty ATTRIBUTE

WITH ATTRIBUTE SYNTAX CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR
callHoldNotificationToHeldPartyBhv BEHAVIOUR
DEFINED AS "The value of this attribute identifies whether the held/retrieved party should be notified when placed on hold or retrieved from hold. When this attribute is TRUE, a notification will be sent both when the caller is placed on hold and when the caller is retrieved from hold. When the value is FALSE, no notification is given in either instance.";;
REGISTERED AS {cAISDNSSAttribute 7};

6.8 Called User In-Band Notification

calledUserInBandNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR
calledUserInBandNotificationBehaviour BEHAVIOUR
DEFINED AS "The value of this attribute indicates whether in-band tones are to be provided to the called subscriber to indicate a waiting call. When the value of this attribute is FALSE, in-band notification is used to alert the called party of a waiting call. When TRUE, both in-band and out-of-band notification are used.";;
REGISTERED AS {cAISDNSSAttribute 8};

6.9 Called Party Sub-Address Info Transfer

calledPartySubAddressInfoTransfer ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
calledPartySubaddressInfoTransferBehaviour BEHAVIOUR
DEFINED AS "When the value of this attribute is TRUE, the called party's subaddress information will be accepted and transferred from the CPE on call origination. When the attribute value is FALSE, the called party's subaddress information transfer is not provided.";;
REGISTERED AS {cAISDNSSAttribute 9};

6.10 Call Forward Active Notification

callForwardActiveNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
callForwardActiveNotificationBhv BEHAVIOUR
DEFINED AS "This attribute is used as a flag to indicate whether the served user is to be notified that callforwarding is active.";;
REGISTERED AS {cAISDNSSAttribute 10};

6.11 Call Forward Calling Notification

callForwardCallingNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CallForwardCallingNotification;
MATCHES FOR EQUALITY;
BEHAVIOUR
callForwardCallingNotificationBhv BEHAVIOUR
DEFINED AS "This attribute is used as a flag to indicate whether the calling user is to be notified that his call has been forwarded.";;
REGISTERED AS {cAISDNSSAttribute 11};

6.12 Call Forward Release Notification

callForwardReleaseNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
callForwardReleaseNotificationBhv BEHAVIOUR
DEFINED AS "This attribute is used as a flag to indicate whether served user releases number information to forwarded-to user.";;
REGISTERED AS {cAISDNSSAttribute 12};

6.13 Call Forward Served Notification

callForwardServedNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
callForwardServedNotificationBhv BEHAVIOUR
DEFINED AS "This attribute is used as a flag to indicate whether served user receives notification that a call has been forwarded.";;
REGISTERED AS {cAISDNSSAttribute 13};

6.14 Call Hold B-Channel Reservation Release

callHoldBChannelReservationRelease ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
callHoldBChannelReservationReleaseBhv BEHAVIOUR
DEFINED AS "The value of this attribute identifies whether the user has the ability to release all reserved B-channels. When the value of this boolean attribute is TRUE, the user has the ability to release all currently reserved B-channels. Additional B-channels will be reserved as subsequent calls are placed on hold. When the value of this attribute is FALSE, the user does not have the ability to release the B-channels, and each reserved channel shall only be released as the associated call that caused it to be reserved is released or retrieved from hold.";;
REGISTERED AS {cAISDNSSAttribute 14};

6.15 Call Hold Optional Guard Timer

callHoldOptionalGuardTimer ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CallHoldOptionalGuardTimer;
MATCHES FOR EQUALITY;
BEHAVIOUR
callHoldOptionalGuardTimerBhv BEHAVIOUR
DEFINED AS "The value of this attribute identifies the length of time after which the switch shall release a held call to free up switch resources and to keep a call from being held forever. The allowable values for this attribute are in minutes from 30 to 2880 (48 hours). The default value for this attribute shall be 2880 minutes (48 hours).";;
REGISTERED AS {cAISDNSSAttribute 15};

6.16 Calling Party SubAddress Registration

callingPartySubaddressRegistration ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
callingPartySubaddressRegistrationBhv BEHAVIOUR
DEFINED AS "This Boolean attribute is a service provider option that allows it to register the calling party subaddress if provided by the user as part of the information registered in MCID as described in I.251.7.";;
REGISTERED AS {cAISDNSSAttribute 16};

6.17 Call Reference Busy Limit

callReferenceBusyLimit ATTRIBUTE
WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CallReferenceBusyLimit;
MATCHES FOR EQUALITY;
BEHAVIOUR
callReferenceBusyLimitBhv BEHAVIOUR

DEFINED AS "The value of this attribute identifies the maximum number of simultaneous calls that can be handled (e.g. active, held, alerting, waiting) by a directory number and bearer service.";;

REGISTERED AS {cAISDNSSAttribute 17};

6.18 Call Restriction Options

callIdRestrictionOptions ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.CallIdRestrictionOptions;

MATCHES FOR EQUALITY;

BEHAVIOUR

callIdRestrictionOptionsBhv BEHAVIOUR

DEFINED AS "This attribute of the CLIR supplementary service allows the subscriber to select the mode in which the calling line identification restriction is applied as described in I.251.4. Valid options for the mode are: Permanent to have the service active for all calls, or Temporary to have the service requested by the user per call.";;

REGISTERED AS {cAISDNSSAttribute 18};

6.19 Call Waiting Calling Notification

callWaitingCallingNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR

callWaitingCallingNotificationBhv BEHAVIOUR

DEFINED AS "This attribute is used as a flag whether the calling user is to be notified that his call is waiting.";;

REGISTERED AS {cAISDNSSAttribute 19};

6.20 Code Word

codeWord ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.CodeWord;

BEHAVIOUR

codeWordBhv BEHAVIOUR

DEFINED AS "This attribute stores the password required to activating the outgoing call barring supplementary service as described in I.255.5. A null value denotes that this service is not configurable by subscribers.";;

REGISTERED AS {cAISDNSSAttribute 20};

6.21 Contention For Incoming Calls

contentionForIncomingCalls ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR

contentionForIncomingCallsBhv BEHAVIOUR

DEFINED AS "When the value of this attribute is TRUE, contention between CPE terminals on the same Basic Rate interface is allowed. When the attribute value is FALSE, contention is not allowed. The default value of this attribute within an ISDN Circuit Switched Services object instance is TRUE. The default value within a Bearer Service For Packet Data object instance is FALSE.";;

REGISTERED AS {cAISDNSSAttribute 21};

6.22 Default Number Of Ports

defaultNumberOfPorts ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.DefaultNumberOfPorts;
MATCHES FOR EQUALITY;
BEHAVIOUR
defaultNumberOfPortsBhv BEHAVIOUR
DEFINED AS "The value of this attribute identifies the number of ports to be used in the supplementary service Conference Calling as defined in I.254.1.";;
REGISTERED AS {cAISDNSSAttribute 22};

6.23 Deflecting Number Delivery

deflectingNumberDelivery ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
deflectingNumberDeliveryBhv BEHAVIOUR
DEFINED AS "This Boolean attribute indicates the subscription option of allowing whether the serviced user is permitted to release his number to the deflected-to terminal or not, as defined in I.252.5.";;
REGISTERED AS {cAISDNSSAttribute 23};

6.24 Deflecting Number Notification

deflectingNumberNotification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
deflectingNumberNotificationBhv BEHAVIOUR
DEFINED AS "This attribute indicates the subscription option of whether a calling user receives notification that his call has been deflected or not. In the case the use is to be notified, the deflected to number may be sent to the originator of the call as defined in I.252.5.";;
REGISTERED AS {cAISDNSSAttribute 24};

6.25 High Layer Compatibility Transfer

highLayerCompatibilityInfoTransfer ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
highLayerCompatibilityInfoTransferBhv BEHAVIOUR
DEFINED AS "When the value of this attribute is TRUE, the capability to accept and transfer the High Layer Compatibility information element for layers 1 through 3 from the user equipment on circuit mode call originations is provided. When the attribute value is FALSE, the capability is not provided.";;
REGISTERED AS {cAISDNSSAttribute 25};

6.26 Incoming Calls Barred

incomingCallsBarred ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
incomingCallsBarredBhv BEHAVIOUR
DEFINED AS "When the value of this attribute is TRUE, attempts to terminate a call will be denied. The value FALSE indicates that the attempt is allowed.";;
REGISTERED AS {cAISDNSSAttribute 26};

6.27 Invocation Time

invocationTime ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.TimePeriod;

MATCHES FOR EQUALITY;

BEHAVIOUR

invocationTimeBhv BEHAVIOUR

DEFINED AS "This attribute allows the service provider to specify the period of time in which the MCID service may be invoked automatically as described in I.251.7.";;

REGISTERED AS {cAISDNSSAttribute 27};

6.28 ISDN Circuit Set ID

iSDNCircuitSetId ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.NameType;

MATCHES FOR EQUALITY, ORDERING, SUBSTRINGS;

BEHAVIOUR

iSDNCircuitSetIdBhv BEHAVIOUR

DEFINED AS "This is a naming attribute. If the string choice for the syntax is used, matching on the substrings is permitted. If the number choice for the syntax is used, then matching on ordering is permitted.";;

REGISTERED AS {cAISDNSSAttribute 28};

6.29 Limit Of Reserved Channels

limitOfReservedChannels ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.LimitOfReservedChannels;

MATCHES FOR EQUALITY;

BEHAVIOUR

limitOfReservedChannelsBhv BEHAVIOUR

DEFINED AS "The value of this attribute identifies the maximum number of B-channels to be reserved for a particular terminal that has placed calls on hold. The B-channel is reserved to allow the user to originate another call, receive another call, or retrieve the held call. If the value of this attribute is 0, no channels will be reserved. For any value of this attribute other than 0, each call placed on hold will result in an additional channel being reserved, up to the limit of the number of channels specified by this attribute. This attribute may be set to values from 0 up to and including the number of channels on the interface.";;

REGISTERED AS {cAISDNSSAttribute 29};

6.30 Low Layer Compatibility Info Transfer

lowLayerCompatibilityInfoTransfer ATTRIBUTE

WITH ATTRIBUTE SYNTAX

CAISDNSSModule.Boolean;

MATCHES FOR EQUALITY;

BEHAVIOUR

lowLayerCompatibilityInfoTransferBhv BEHAVIOUR

DEFINED AS "This attribute is a Boolean attribute of the ISDN Circuit Switched Services object class. When the value of this attribute is TRUE, the ISDN switch provides the capability to accept and transfer the Low Layer Compatibility information element from the user equipment on circuit mode call originations. When the attribute value is FALSE (default), the capability is not provided.";;

REGISTERED AS {cAISDNSSAttribute 30};

6.31 Max Number Of Ports

maxNumberOfPorts ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.MaxNumberOfPorts;
MATCHES FOR EQUALITY;
BEHAVIOUR
maxNumberOfPortsBhv BEHAVIOUR
DEFINED AS "This attribute determines the maximum number of ports the subscriber is allowed to use while setting up a conference call according to I.254.1.";;
REGISTERED AS {cAISDNSSAttribute 31};

6.32 Max Number Of Waiting Calls

maxNumberOfWaitingCalls ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.MaxNumberOfWaitingCalls;
MATCHES FOR EQUALITY;
BEHAVIOUR
maxNumberOfWaitingCallsBhv BEHAVIOUR
DEFINED AS "The value of this attribute determines the maximum number of calls that can be waiting for directory number(s) and bearer service according to I.253.1.";;
REGISTERED AS {cAISDNSSAttribute 32};

6.33 No Restriction Allowed

noRestrictionsAllowed ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
noRestrictionsAllowedBhv BEHAVIOUR
DEFINED AS "This attribute of CLIP is where the called party continues to have the capability to override the CLIR restriction and have the calling party number presented as described in the CLIP supplementary service as defined in I.251.3. A TRUE value of this attribute permits the called party CLIP supplementary service to override the calling party CLIR supplementary service.";;
REGISTERED AS {cAISDNSSAttribute 33};

6.34 Number Digits For Call Id

numOfDigitsForCallId ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.NumOfDigitsForCallId;
MATCHES FOR EQUALITY;
BEHAVIOUR
numOfDigitsForCallIdBhv BEHAVIOUR
DEFINED AS "This attribute of numOfDigitsForCallId identifies the number of digits for the MSN supplementary service as described in I.251.2.";;
REGISTERED AS {cAISDNSSAttribute 34};

6.35 Number Of Digits For Terminal Identifier

numOfDigitsForTerminalIdentifier ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.NumOfDigitsForTerminalIdentifier;
MATCHES FOR EQUALITY;
BEHAVIOUR
numOfDigitsForTerminalIdentifierBhv BEHAVIOUR
DEFINED AS "This attribute of numOfDigitsForTerminalIdentifier identifies the number of digits allocated to enable all terminals in a point-to-multipoint configuration to react in the same way as they would if the supplementary service MSN were not subscribed to as described in I.251.2.";;
REGISTERED AS {cAISDNSSAttribute 35};

6.36 Number Of Digits Not To Transmit

numOfDigitsNotToTransmit ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.NumOfDigitsNotToTransmit;
MATCHES FOR EQUALITY;
BEHAVIOUR
numOfDigitsNotToTransmitBhv BEHAVIOUR
DEFINED AS "This attribute specifies the number of digits to be stripped out of the original dialed number before it is delivered to the private exchange for the direct dialed in supplementary service as described in I.252.1.";;
REGISTERED AS {cAISDNSSAttribute 36};

6.37 Outgoing Call Barring Category

outgoingCallBarringCategory ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.OutgoingCallBarringCategory;
MATCHES FOR EQUALITY;
BEHAVIOUR
outgoingCallBarringCategoryBhv BEHAVIOUR
DEFINED AS "The values of this attribute identify the category of the outgoing call as described in I.255.5.";;
REGISTERED AS {cAISDNSSAttribute 37};

6.38 Outgoing Call Barring Treatment

outgoingCallBarringTreatment ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.InterceptTreatmentOrigin;
MATCHES FOR EQUALITY;
BEHAVIOUR
outgoingCallBarringTreatmentBhv BEHAVIOUR
DEFINED AS "The values of this attribute identify the Treatment of the outgoing call as described in I.255.5.";;
REGISTERED AS {cAISDNSSAttribute 38};

6.39 Outgoing Calls Barred

outgoingCallsBarred ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
outgoingCallsBarredBhv BEHAVIOUR
DEFINED AS "When the value of this attribute is TRUE, call origination is denied. The value FALSE indicates that origination is allowed.";;
REGISTERED AS {cAISDNSSAttribute 39};

6.40 Prohibit IC Selection

prohibitICSelection ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
prohibitICSelectionBhv BEHAVIOUR
DEFINED AS "This attribute, when TRUE, prohibits the selection of an interLATA Carrier or bars the selection of a ROA in a packet environment.";;
REGISTERED AS {cAISDNSSAttribute 40};

6.41 Service Restriction ID

serviceRestrictionsId ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.NameType;
MATCHES FOR EQUALITY, ORDERING, SUBSTRINGS;
BEHAVIOUR
serviceRestrictionsIdBhv BEHAVIOUR
DEFINED AS "This is a naming attribute. If the string choice for the syntax is used, matching on the substrings is permitted. If the number choice for the syntax is used, then matching on ordering is permitted.";;
REGISTERED AS {cAISDNSSAttribute 41};

6.42 Supplementary service Three-Party Service

supplementaryServiceThreePartyService ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR
supplementaryServiceThreePartyServiceBhv BEHAVIOUR
DEFINED AS "This is a boolean attribute to indicate whether a subscriber can initiate a three-way conversation with two other parties or not. The three-party supplementary service procedures are described in I.254.2.";;
REGISTERED AS {cAISDNSSAttribute 42};

6.43 Terminal Service Profile Pointer

terminalServiceProfilePtr ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.ObjectInstance;
MATCHES FOR EQUALITY, SET-COMPARISON, SET-INTERSECTION;
BEHAVIOUR
terminalServiceProfilePtrBhv BEHAVIOUR
DEFINED AS "This attribute is used as a pointer to an instance of Q.824.1 terminalServiceProfile managed object class.";;
REGISTERED AS {cAISDNSSAttribute 43};

6.44 Transfer Procedure

transferProcedure ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.TransferProcedure;
MATCHES FOR EQUALITY;
BEHAVIOUR
transferProcedureBhv BEHAVIOUR
DEFINED AS "This attribute defines the procedures used to transfer calls to a third party according to I.252.1.";;
REGISTERED AS {cAISDNSSAttribute 44};

6.45 User-to-User Signalling Service Category

userToUserSignallingServiceCategory ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.UserToUserSignallingServiceCategory;
MATCHES FOR EQUALITY;
BEHAVIOUR
userToUserSignallingServiceCategoryBhv BEHAVIOUR
DEFINED AS "This attribute identifies the category of the User-to-User Signalling Service according to I.257.1.";;
REGISTERED AS {cAISDNSSAttribute 45};

7 Name-bindings

7.1 ISDN Circuit Service Set

```
iSDNCircuitServiceSet-bearerService NAME BINDING

SUBORDINATE OBJECT CLASS iSDNCircuitServiceSet AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS "ITU-T Rec. Q.824.0":bearerService AND SUBCLASSES;
        WITH ATTRIBUTE iSDNCircuitSetId;
        CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING,
        WITH-REFERENCE-OBJECT;
        DELETE;
REGISTERED AS {cAISDNSSNameBinding 1};
```

7.2 Service Restrictions

```
serviceRestrictions-customerProfile  NAME BINDING

        SUBORDINATE OBJECT CLASS serviceRestrictions;
        NAMED BY
        SUPERIOR OBJECT CLASS  "ITU-T Rec. Q.824.0":customerProfile AND SUBCLASSES;
        WITH ATTRIBUTE serviceRestrictionsId;
        CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING,
        WITH-REFERENCE-OBJECT;
        DELETE;
REGISTERED AS {cAISDNSSNameBinding 2};
```

8 Type definitions

```
CAISDNSSModule {itu-t(0) recommendation(0) q(17) ca(824) dot(127) isdnss(2) informationModel(0)
asn1Modules(2) cAISDNSSModule(0)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

-- EXPORTS Everything;

IMPORTS

DirectoryNumber,
NumberOfBChannels,
InterceptTreatmentOrigin
FROM CAISDNModule {itu-t(0) recommendation(0) q(17) ca(824) dot(127) isdn(1) informationModel(0)
asn1Modules(2) cAISDNModule(0)}

incomingCallsBarred,
outgoingCallsBarred
FROM NLM {joint-iso-ccitt network-layer (13) management (0) nLM(2) asn1Module (2) 0}

ObjectInstance,
ObjectClass
FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)}

Boolean,
NameType,
ObjectList,
Pointer,
PointerOrNull
FROM ASN1DefinedTypesModule {ccitt recommendation m(13) gnm(3100) informationModel(0)
asn1Modules(2) asn1DefinedTypesModule(0)};

q824-2InformationModel OBJECT IDENTIFIER ::= {itu-t(0) recommendation(0) q(17) ca(824) dot(127)
isdnss(2) informationModel(0)}
cAISDNSSObjectClass OBJECT IDENTIFIER ::= {q824-2InformationModel managedObjectClass(3)}
cAISDNSSPackage OBJECT IDENTIFIER ::= {q824-2InformationModel package(4)}
cAISDNSSAttribute OBJECT IDENTIFIER ::= {q824-2InformationModel attribute(7)}
cAISDNSSNameBinding OBJECT IDENTIFIER ::= {q824-2InformationModel nameBinding(6)}
cAISDNSSAction OBJECT IDENTIFIER ::= {q824-2InformationModel action(9)}
```

-- default value definitions --

false Boolean ::= FALSE
true Boolean ::= TRUE
null NULL ::= NULL
one INTEGER ::= 1
zero INTEGER ::= 0
minusOne INTEGER ::= –1
emptySet NULL ::= NULL

-- supporting productions --

ActivationOption ::= ENUMERATED {subscriber (1), operator (2)}

ActivationStatus ::= ENUMERATED {active (1), inactive (2)}

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

AssocDefaultDN ::= DirectoryNumber

LimitOfReservedChannels ::= NumberOfBChannels

CallForwardCallingNotification ::= INTEGER

{no (0),
yesWithoutNumber (1),
yesWithNumber (2)}

CallHoldOptionalGuardTimer ::= INTEGER

CallReferenceBusyLimit ::= INTEGER

CallIdRestrictionOptions ::= SEQUENCE {

mode ENUMERATED {permanent(1), temporary(2)},
default ENUMERATED {restricted(1),
notRestr(2)} OPTIONAL *-- for temporary mode only --*
}

CodeWord ::= GraphicString

DefaultNumberOfPorts ::= INTEGER

MaxNumberOfPorts ::= INTEGER

MaxNumberOfWaitingCalls ::= INTEGER (1..MAX)

NumOfDigitsForCallId ::= INTEGER

NumOfDigitsForTerminalIdentifier ::= INTEGER

NumOfDigitsNotToTransmit ::= INTEGER

OutgoingCallBarringCategory ::= ENUMERATED {general (1), special (2)}

TimePeriod ::= SEQUENCE {beginTime UTCTime, endTime UTCTime}

TransferProcedure ::= BIT STRING {normal(0), singleStep(1), explicit(2)}

UserToUserSignallingServiceCategory ::= ENUMERATED {

duringSetupInCallControl (1),

duringSetupIndepFromCallControl (2),

duringActive (3)}

END *-- Type definitions --*

Appendix I

Initial view for extending the model-to-model closed user groups

(This appendix does not form an integral part of this Recommendation)

NOTE – This appendix contains an initial view on the direction in which this model will be extended to model closed user groups. The managed objects and name-bindings in this appendix are not reflected in the E-R, inheritance and naming diagrams of the main text.

I.1 CUG (Closed User Group)

The attributes of this object are applicable only in the case that the Closed User Group (CUG) is administered on a nodal basis. However, the closed user group feature is also defined to be applied to configurations that span multiple nodes across the network. In such case, the following object definition does not apply as the CUG service data is stored outside the exchange.

cUG MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceServiceDependent;

CHARACTERIZED BY

cUGPkg PACKAGE

BEHAVIOUR

cUGBhv BEHAVIOUR

DEFINED AS "This managed object class is used to store the closed user group general subscription options specified by I.255.1. This package is instantiated by for each Closed User Group. The attributes cUGInterlockCode and cUGDataNetworkIdentification can be got or replaced only by Administration not by customer. When the value of cUGBarring is outgoingCallsBarred, this CUG must not be a preferential Closed User Group (denoted by preferredCUGId in CUGSubscriptionOption managed object).";;

ATTRIBUTES

cUGIndex	**GET-REPLACE,**
cUGInterlockCode	**GET-REPLACE,**
cUGDataNetworkIdentification	**GET-REPLACE,**
cUGBarring	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass ?};

I.2 CUG Subscription Option

cUGSubscriptionOption MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.824.0":supplementaryServiceServiceDependent;

CHARACTERIZED BY

cUGSubscriptionOptionPkg PACKAGE

BEHAVIOUR

cUGSubscriptionOptionBhv BEHAVIOUR

DEFINED AS "The CUG subscription options object may only be instantiated if either attribute preferredCUGId is assigned a non-NULL value or attribute interCUGaccess is not empty. M_SET operations which would result in preferredCUGId value NULL and interCUGaccess value empty set are not allowed. The value of attribute preferredCUGId should not be NULL when interCUGvalue is 'none' or 'incomingaccess'.";;

ATTRIBUTES

preferredCUGIndex	**GET-REPLACE,**
interCUGaccess	**GET-REPLACE;;;**

REGISTERED AS {cAISDNSSObjectClass ?};

I.3 Attribute definition

cUGBarring ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CUGBarring;
MATCHES FOR EQUALITY;
BEHAVIOUR
cUGBarringBhv BEHAVIOUR
DEFINED AS "This attribute maintains the Intra-CUG restriction of the General subscription option in I.255.1. It may have one of the following values: none, incomingCallsBarred or outgoingCallsBarred.";;
REGISTERED AS {cAISDNSSAttribute ?};

cUGDataNetworkIdentification ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CUGDataNetworkIdentification;
MATCHES FOR EQUALITY;
BEHAVIOUR
cUGDataNetworkIdentificationBhv BEHAVIOUR
DEFINED AS "This information is signalled during set-up of a CUG call and serves (in conjunction with the closed user groupInterlockCode) to uniquely identify the CUG in the international network. It can be thought of as the area code of the CUG.";;
REGISTERED AS {cAISDNSSAttribute ?};

cUGIndex ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CUGIndex;
MATCHES FOR EQUALITY;
BEHAVIOUR
cUGIndexBhv BEHAVIOUR
DEFINED AS "cUGIndex of General subscription option in I.255.1 must 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.";;
REGISTERED AS {cAISDNSSAttribute ?};

cUGInterlockCode ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.CUGInterlockCode;
MATCHES FOR EQUALITY;
BEHAVIOUR
cUGInterlockCodeBhv BEHAVIOUR
DEFINED AS "The attribute cugInterlockCode must be assigned explicitly upon object creation. No multiple instances of the closed user group object class contained within a single object are allowed to have identical combinations of attribute cugInterlockCode and cugDataNetworkIdentification.";;
REGISTERED AS {cAISDNSSAttribute ?};

interCUGaccess ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.InterCUGaccess;
MATCHES FOR EQUALITY;
BEHAVIOUR
interCUGaccessBhv BEHAVIOUR
DEFINED AS "Inter-CUG access of per service subscription option in I.255.1. The values are none, outgoingAccess, incomingAccess and outgoingAndIncomingAccess";;
REGISTERED AS {cAISDNSSAttribute ?};

preferredCUGIndex ATTRIBUTE

WITH ATTRIBUTE SYNTAX
CAISDNSSModule.PreferredCUGIndex;
MATCHES FOR EQUALITY;
BEHAVIOUR
preferredCUGIndexBhv BEHAVIOUR
DEFINED AS "CUG index of General subscription option in I.255.1.";;
REGISTERED AS {cAISDNSSAttribute ?};

I.4 Name-binding

cUG-bearerService NAME BINDING

SUBORDINATE OBJECT CLASS cUG AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS "ITU-T Rec. M.3100":network AND SUBCLASSES;
WITH ATTRIBUTE "ITU-T Rec. Q.824.0":supplementaryServiceId;
CREATE
WITH-AUTOMATIC-INSTANCE-NAMING,
WITH-REFERENCE-OBJECT;
DELETE;
REGISTERED AS {cAISDNSSNameBinding ?};

cUGSubscriptionOption-bearerService NAME BINDING

SUBORDINATE OBJECT CLASS cUGSubscriptionOption AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS "ITU-T Rec. Q.824.0":bearerService AND SUBCLASSES;
WITH ATTRIBUTE "ITU-T Rec. Q.824.0":supplementaryServiceId;
CREATE
WITH-AUTOMATIC-INSTANCE-NAMING,
WITH-REFERENCE-OBJECT;
DELETE;
REGISTERED AS {cAISDNSSNameBinding ?};

I.5 Attribute syntax

CUGBarring ::=

ENUMERATED { none (1),
incomingCallsBarred (2),
outgoingCallsBarred (3)}

CUGDataNetworkIdentification ::= OCTET STRING(SIZE(4))

CUGIndex ::= INTEGER(0..32767) -- *Recommendation Q.755*

CUGInterlockCode ::= OCTET STRING(SIZE(1..2)) -- *Recommendation Q.735*

InterCUGaccess ::= ENUMERATED
{none(1),
outgoingAccess (2),
incomingAccess (3),
ougoingAndIncomingAccess (4)}

PreferredCUGIndex ::= CHOICE {notDefined [0] NULL, defined [1] CUGIndex}