



SLOVENSKI STANDARD
SIST I-ETS 300 292 E1:2003

01-december-2003

Omrežni vidiki (NA) – Funkcijska specifikacija upravljanja informacije usmerjanja klica na vmesniku operacijski sistem/omrežni element (OS/NE)

Network Aspects (NA); Functional specification of call routing information management on the Operations System/Network Element (OS/NE) interface

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **SIST I-ETS 300 292 E1:2003** **I-ETS 300 292 Edition 1**
<https://standards.iteh.ai/catalog/standards/sist/d421/997/-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>

ICS:

33.040.35 Telefonska omrežja Telephone networks

SIST I-ETS 300 292 E1:2003 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)

<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>



I
E
T
S

**INTERIM
EUROPEAN
TELECOMMUNICATION
STANDARD**

I-ETS 300 292

January 1995

Source: ETSI TC-NA

Reference: DI/NA-043310

ICS: 33.080

Key words: Interface, management, routeing, TMN

iTeh STANDARD PREVIEW
Network Aspects (NA);
(standards.iteh.ai)

**Functional specification of call routeing information management
on the Operations System/Network Element (OS/NE) interface**

SIST I-ETS 300 292 E1:2003
4527b050d625/sist-i-ets-300-292-e1-2003

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1995. All rights reserved.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)

<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>

Contents

| | |
|--|----|
| Foreword | 7 |
| 1 Scope | 9 |
| 2 Normative references | 10 |
| 3 Definitions, symbols and abbreviations | 10 |
| 3.1 Definitions | 10 |
| 3.2 Symbols and abbreviations | 11 |
| 4 Description | 11 |
| 5 Information model | 12 |
| 5.1 Information model description | 12 |
| 5.2 Information model diagrams | 14 |
| 6 Information model description | 19 |
| 6.1 AnalysisCriteria | 19 |
| 6.2 CallingPartyAspects | 20 |
| 6.3 CallHistoryMatchingParameters | 21 |
| 6.4 DigitElement | 22 |
| 6.5 DigitManipulation | 23 |
| 6.6 DigitPreparationCriteria | 23 |
| 6.7 DigitRebuildingCriteria | 24 |
| 6.8 Exception | 25 |
| 6.9 ExchangeTerminationPoint | 26 |
| 6.10 ExchangeTerminationPointSubGroup | 26 |
| 6.11 LocalDestination | 28 |
| 6.12 ManagedSwitchingElement | 28 |
| 6.13 OrderedListXTPSGComb | 28 |
| 6.14 RouteSelectionCriteria | 29 |
| 6.15 routeingTarget | 30 |
| 6.16 Treatment | 31 |
| 6.17 X-OGroup | 32 |
| 6.18 XTPSGComb | 32 |
| 7 Formal definitions | 34 |
| 7.1 Definition of managed objects | 34 |
| 7.1.1 Analysis criteria | 34 |
| 7.1.2 Call history matching parameters | 34 |
| 7.1.3 Calling party aspects | 34 |
| 7.1.4 Digit rebuilding criteria | 35 |
| 7.1.5 Digit element | 35 |
| 7.1.6 Digit manipulation | 35 |
| 7.1.7 Digit preparation criteria | 36 |
| 7.1.8 Exceptions | 36 |
| 7.1.9 Local destination | 36 |
| 7.1.10 Ordered list XTPSG combination | 36 |
| 7.1.11 Route selection criteria | 37 |
| 7.1.12 Routeing target | 37 |
| 7.1.13 Treatment | 37 |
| 7.1.14 X-O Group | 37 |
| 7.1.15 XTPSG combination | 38 |
| 7.2 Definition of attributes | 38 |
| 7.2.1 activeOrderedListXTPSGComb | 38 |
| 7.2.2 analysisCriteriaId | 38 |
| 7.2.3 calledNumberingPlans | 38 |

| | | |
|--------|---------------------------------------|----|
| 7.2.4 | callingPartyAspectsId..... | 38 |
| 7.2.5 | callingPartyAspectList..... | 38 |
| 7.2.6 | callingPartyCat..... | 38 |
| 7.2.7 | decisions..... | 38 |
| 7.2.8 | decisionTypes..... | 39 |
| 7.2.9 | digitCombInsert..... | 39 |
| 7.2.10 | digitCombReplace..... | 39 |
| 7.2.11 | digitElementId..... | 39 |
| 7.2.12 | digitManipId..... | 39 |
| 7.2.13 | digitManipInstance..... | 39 |
| 7.2.14 | digitParticipationIndicator..... | 39 |
| 7.2.15 | digitSuppress..... | 39 |
| 7.2.16 | echoSuppressor..... | 39 |
| 7.2.17 | exceptionsId..... | 39 |
| 7.2.18 | historyId..... | 40 |
| 7.2.19 | incomingX-oGroups..... | 40 |
| 7.2.20 | languageCodePosition..... | 40 |
| 7.2.21 | listOfHistory..... | 40 |
| 7.2.22 | listOfXTPSGs..... | 40 |
| 7.2.23 | listOfXTPSGCombs..... | 40 |
| 7.2.24 | localDestinationId..... | 40 |
| 7.2.25 | matchesIf..... | 40 |
| 7.2.26 | natureOfAddresses..... | 40 |
| 7.2.27 | noOfSatLinks..... | 41 |
| 7.2.28 | orderedListXTPSGCombld..... | 41 |
| 7.2.29 | originGroups..... | 41 |
| 7.2.30 | outDigitsPrimId..... | 41 |
| 7.2.31 | outgoingX-oGroups..... | 41 |
| 7.2.32 | digitRebuildingCriteriaId..... | 41 |
| 7.2.33 | reqBearerCapab..... | 41 |
| 7.2.34 | reqSignCapab..... | 41 |
| 7.2.35 | routeSelectionCriteriaId..... | 41 |
| 7.2.36 | routeingTargetId..... | 41 |
| 7.2.37 | routeingTargetIds..... | 42 |
| 7.2.38 | routeingTargetInstance..... | 42 |
| 7.2.39 | schedulingAttribute..... | 42 |
| 7.2.40 | transitNetworkSelection..... | 42 |
| 7.2.41 | treatmentId..... | 42 |
| 7.2.42 | treatmentInstance..... | 42 |
| 7.2.43 | usedAlgorithm..... | 42 |
| 7.2.44 | x-oGroupId..... | 42 |
| 7.2.45 | x-oGroups..... | 42 |
| 7.2.46 | xtpsgCombld..... | 43 |
| 7.2.47 | xtpsgList..... | 43 |
| 7.3 | Name bindings..... | 43 |
| 7.3.1 | Analysis criteria..... | 43 |
| 7.3.2 | Call history matching parameters..... | 43 |
| 7.3.3 | Calling party aspects..... | 43 |
| 7.3.4 | Digit rebuilding criteria..... | 43 |
| 7.3.5 | Digit manipulation..... | 43 |
| 7.3.6 | Digit preparation criteria..... | 44 |
| 7.3.7 | Digit element..... | 44 |
| 7.3.8 | Exceptions..... | 44 |
| 7.3.9 | Local destination..... | 44 |
| 7.3.10 | Ordered list XTPSG combination..... | 44 |
| 7.3.11 | Route selection criteria..... | 44 |
| 7.3.12 | Routeing target..... | 44 |
| 7.3.13 | Treatment..... | 45 |
| 7.3.14 | X-O Group..... | 45 |
| 7.3.15 | XTPSG combination..... | 45 |
| 7.4 | ASN.1 defined types module..... | 46 |
| 7.5 | Cross reference list..... | 48 |

| | | |
|------------------------|--|----|
| Annex A (informative): | Explanation of object classes for routeing information management..... | 49 |
| Annex B (informative): | Explanation of object classes for management of test calls..... | 58 |
| Annex C (informative): | Candidate object classes for other management services..... | 59 |
| Annex D (informative): | Formal description of object classes defined in I-ETS 300 293 | 60 |
| D.1 | Definition of managed objects..... | 60 |
| D.2 | Definiton of attributes | 61 |
| D.3 | Name bindings | 62 |
| D.4 | Definition of actions..... | 62 |
| D.5 | ASN.1 defined types module..... | 63 |
| Annex E (informative): | Bibliography..... | 65 |
| History..... | | 67 |

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)
<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)

<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>

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 its life extended for a further two years, be replaced by a new version, or be withdrawn.

This I-ETS provides a management information model which covers the management aspects of the "routing and digit analysis" function in an exchange.

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003
https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST I-ETS 300 292 E1:2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)

<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003>

1 Scope

This Interim European Telecommunication Standard (I-ETS) provides a management information model which covers the management aspects of the "routeing and digit analysis" function in an exchange. The scope is further limited to the Network Element (NE) aspects of circuit switched networks. This model is restricted to the Operations Systems (OS) to NE (Q3) interface (see ETR 037). The information to be managed is limited to the signalling systems DSS1, C5, ISUP and R2. The signalling system No. 7 Telephone User Part (TUP) is not considered.

The information model covers the management of the routeing aspects of:

- local originating, local terminating, and transit calls;
- digit analysis;
- termination point selection;
- outgoing digit preparation;
- announcements.

The information model does not cover:

- traffic management (including circuit reservation, including dynamic aspects of proportionate bidding);
- management aspects of call-processing;
- management aspects for routeing of supplementary services;
- management aspects for Intelligent Network (IN);
- relation with customer administration information model;
<https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203->
- relations with other management services of which the definition is still in a premature state (e.g. charging);
- states of object classes (a mixed relation with traffic management);
- Private Automatic Branch Exchange (PABX) as NEs or Exchange Termination Points (XTPs) of subscriber lines (the scope excludes centrex implementations);
- mobility issues like cellular and personal mobility.

In order to claim conformance to this specification, a system needs to support the management functions for all managed object classes defined in clause 7 of this I-ETS. Therefore, clause 6 and clause 7 form the mandatory part of this I-ETS.

2 Normative references

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

- [1] I-ETS 300 293: "Telecommunications Management Network (TMN); Generic managed objects".
- [2] CCITT Recommendation M.3100 (1992): "Generic network information model".
- [3] CCITT Recommendation X.721 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Definition of management information".
- [4] ITU-T Recommendation Q.763 (1993): "Formats and codes".
- [5] ITU-T Recommendation Q.850 (1993): "Use of cause and location in digital subscriber signalling system No. 1 and Signalling System No. 7 ISDN user part".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

analysis criteria: The basic set of information elements to determine the routingTarget or local destination.

circuit subgroup: A set of circuits between the same two exchanges having similar characteristics, i.e. having the same signalling characteristics, the same bearer capabilities and other characteristics. From an exchange view point, circuit subgroups are terminated by an Exchange Termination Point Subgroup (XTPSG).

circuit: A connection between two exchanges. From an exchange view point, circuits are terminated by an exchange termination point.

containment: A structuring relationship for managed objects in which the existence of a managed object is dependent on the existence of a containing managed object (CCITT Recommendation X.720). In this model this relationship (indicated in the diagrams as "contains") is represented by a name binding (also described in CCITT Recommendation X.720).

digit preparation criteria: The basic set of information elements to determine the modifications of the digits, which need to be prepared for the next exchange in the call set-up process.

digit rebuilding criteria: Are the basic set of information elements to determine the modification of incoming digits, which need to be replaced before the digits are analysed.

Exchange Termination Point (XTP): Terminates a circuit.

Exchange Termination Point Subgroup (XTPSG): A set of XTPs with similar characteristics for call routing, i.e. the same signalling characteristics, the same bearer capabilities, the same endpoints and other characteristics.

Network Element (NE): A network element consists of telecommunication equipment and support equipment that performs network element functions and has one or more standard Q-type interfaces (CCITT Recommendation M.3010).

Operations System (OS): Is the stand-alone system which performs operation system functions (CCITT Recommendation M.3010).

route selection criteria: are the basic set of information elements on which the set of possible XTPSGs to reach a routingTarget will be selected.

routing target: Is a set of terminal points, which are not distinguishable from a call routing point of view, as seen by a particular exchange, i.e. for all terminal points of the set, the same XTPSGs can be used.

terminal point: Is a point which has a unique geographical address in a network (which has been provided for by the network provider). It can be an exchange, a subscriber installation, etc. A terminal point is independent of the exchange in which the call is in progress.

3.2 Symbols and abbreviations

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

| | |
|-------|--|
| DCME | Digital Circuit Multiplication Equipment |
| CCS | Common Channel Signalling |
| E-R | Entity Relationship |
| IN | Intelligent Network |
| ISDN | Integrated Services Digital Network |
| ISUP | ISDN User Part |
| NE | Network Element |
| NEM | Network Element Management |
| NM | Network Management |
| OS | Operations System |
| PABX | Private Automatic Branch Exchange |
| PSTN | Public Switched Telephone Network |
| TMN | Telecommunication Management Network |
| TUP | Telephone User Part |
| VPN | Virtual Private Network |
| XTP | Exchange Termination Point |
| XTPSG | Exchange Termination Point Subgroup |

4 Description

The purpose of management of routing information in an exchange is to allow either a traffic or a routing manager to change the static routing information. In specifying the managed object classes for routing, certain requirements need to be met:

- define functionality in such a way that routing information may be changed easily;
- it shall be possible to switch between sets of routing information according to a predefined timing schedule, e.g. by introducing scheduling for routing information;
- it shall be possible to verify routing information in an exchange with a minimal distortion in the normal operation of an exchange;
- avoid redundant information at NEs by making use of objects, representing resources, which exist during run-time;
- it shall be possible to expand the model with future requirements, therefore, the specification of object classes for routing purposes shall be expandable.

The scope of this model is limited to the management aspects of digit analysis and call routing. Management of call processing information and traffic management are not covered. Because the borders between call processing, digit analysis, routing and traffic management are not always clear, some readers may find certain items missing, whereas other readers may find items which are not part of the scope.

The following rules are used to differentiate between call processing, digit analysis and routing, and traffic management:

- digit analysis and routing processes are related to the exchange termination point which the call ultimately "locally connects" with. If the managed item has no relation with the choice of the termination point, then this managed item is not part of the management of digit analysis and routing;
- call processing are processes related to whether or not a call is required to be routed and when the call is required to be routed. Those managed items do not influence the choice of termination point;
- the border between traffic management and routing is based on normal conditions which are foreseen as the routing behaviour and controls when unexpected conditions occur (traffic management).

The information for routing purposes, which needs to be maintained by the manager, depends on the signalling system used by the exchange. This information model can be applied for exchanges with the known standardized signalling systems (DSS1, CCS7, R2, C5). Because of the different signalling systems, not all attributes and objects will be applicable for all exchanges. Applicability in the behaviour of the object classes.

5 Information model

5.1 Information model description

The management information model in this I-ETS represents the management information of call routing. In order to describe the management aspects of routing, the routing function has been divided into two parts:

- a) the identification of the routingTarget for the call is made by analysis of the called number and by means of other information;
- b) the selection of a free circuit within a set of suitable circuits on which the call may be progressed. In case the destination is inside the exchange the appropriate exchange termination point(s) has to be selected.

For identification of the routingTarget, information about the call is obtained to decide which incoming digits need to be modified. Other information of the call, combined with the digits (which may have been modified) is obtained in order to determine the identity of routingTarget.

For circuit selection, management aspects are covered to correlate the routingTarget and additional information with a suitable set of circuits. This correlation includes the traffic assignment rules to circuits within the possible set. After the selection of a free circuit the digits might need to be prepared for the adjacent exchange.

Identification of routingTarget fragment

Digit manipulation can be done for at least three reasons, digit rebuilding, digit preparation, digit translation.

Digit rebuilding is an activity on incoming digits, and digit preparation is an activity for outgoing digits. The transformation is additional to the original digits (i.e. before translation) and independent of the real original digits for these two cases. As an example both digit rebuilding and digit preparation are activities sometimes necessary if R2 signalling is used. The necessary management aspects are captured using the entities DigitRebuildingCriteria (rebuilding) and DigitPreparationCriteria (preparation).

With digit translation, the offered digits themselves are modified. Examples of when this occurs are so-called "service numbers" (i.e. the 800 series in the USA) emergency number (i.e. 911 in the USA) but also for Virtual Private Networks (VPNs), where the private dialling plan is translated to the wide area network numbering plan. The necessary management information is captured in the entity AnalysisCriteria.

The determination of the routingTarget is based on digits provided with the call, which may have gone through digit manipulation zero or more times.

Information, similar to signalling system call parameters, are stored in a switch and grouped, so that calls matching these parameters will all be routed according the same routingTarget (or handled by alternative actions like announcements). Additionally, for locally originated calls, the NatureOfAddress and CalledNumberingPlan may be determined for signalling systems which require this. All this information, necessary to be managed, is captured by the entity AnalysisCriteria.

Selection fragment

For the management aspects of the selection of a free circuit the entity routeSelectionCriteria is defined. The routeSelectionCriteria represent the simple criteria (like the routingTarget) on which the possible sets of circuit (sub)groups are chosen. Information associated with a call is compared with the criteria of the routeSelectionCriteria. For management purposes the routeSelectionCriteria can be used to control the selection function.

[SIST I-ETS 300 292 E1:2003
https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003](https://standards.iteh.ai/catalog/standards/sist/d42f7997-988c-428a-a203-4527b050d625/sist-i-ets-300-292-e1-2003)