



# SLOVENSKI STANDARD

## SIST EN 300 356-35 V3.1.2:2005

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8 [[ ]HJbc`ca fYy`Y`n`]bhY[ f]fUb]a ]gfcf]hj Ua ]fG8 Bk!`G][ bU]nUW]U`yH`+`!`HfYhU  
fUn` ]WU`G8 B!i dcfUVb]y`Y[ UXYUfG! Dk`nU`a YXbUfcXb]`j`a Ygb\_`!`" ) "XY.  
N[ fUXVUdfYg\_i yU`bY[ U`b]nU]b`bUa Yb]`dfYg\_i yU`b`U`fHGG/ HDk!`GdYWZ\_`UW]U`nU  
Xcdc`b]`bYgfcf]hj Y

Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 35: Test Suite Structure and Test Purposes (TSS&TP) specification for supplementary services

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**ICS:**

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# ETSI EN 300 356-35 V3.1.2 (2000-09)

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*European Standard (Telecommunications series)*

**Integrated Services Digital Network (ISDN);  
Signalling System No.7;  
ISDN User Part (ISUP) version 3 for the international interface;  
Part 35: Test Suite Structure and Test Purposes (TSS&TP)  
specification for supplementary services**

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## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocol and Switching (SPS).

The present document is part 35 of a multi-part EN covering the Integrated Services Digital Network (ISDN); Signalling System No.7 ISDN User Part (ISUP) version 3 for the international interface, as identified below:

- Part 1: "Basic services";
- Part 2: "ISDN supplementary services";
- Part 3: "Calling Line Identification Presentation (CLIP) supplementary service";
- Part 4: "Calling Line Identification Restriction (CLIR) supplementary service";
- Part 5: "Connected Line Identification Presentation (COLP) supplementary service";
- Part 6: "Connected Line Identification Restriction (COLR) supplementary service";
- Part 7: "Terminal Portability (TP) supplementary service";
- Part 8: "User-to-User Signalling (UUS) supplementary service";
- Part 9: "Closed User Group (CUG) supplementary service";
- Part 10: "Subaddressing (SUB) supplementary service";
- Part 11: "Malicious Call Identification (MCID) supplementary service";
- Part 12: "Conference Call, add-on (CONF) supplementary service";
- Part 14: "Explicit Call Transfer (ECT) supplementary service";
- Part 15: "Diversion supplementary services";
- Part 16: "Call Hold (HOLD) supplementary service";
- Part 17: "Call Waiting (CW) supplementary service";
- Part 18: "Completion of Calls to Busy Subscriber (CCBS) supplementary service";
- Part 19: "Three party (3PTY) supplementary service";
- Part 20: "Completion of Calls on No Reply (CCNR) supplementary service";
- Part 31: "Protocol Implementation Conformance Statement (PICS) proforma specification for supplementary services";
- Part 32: "Test Suite Structure and Test Purposes (TSS&TP) specification for basic services";

Part 33: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for basic services";

Part 34: "Protocol Implementation Conformance Statement (PICS) proforma specification for supplementary services";

**Part 35: "Test Suite Structure and Test Purposes (TSS&TP) specification for supplementary services";**

Part 36: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for supplementary services".

NOTE: Part 13 and 21 to 30 have not been issued.

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# 1 Scope

The present document presents the test suite structure and test purposes (TSS&TP) for ISUP v3 supplementary services defined in [1] to [21]. The present document applies only to exchanges having implemented the ISUP v3 protocol specification. It is applicable for validation testing of all types of exchanges as defined in the ISUP v3 protocol specification. The present document does not deal with compatibility testing. The main text part of the present document presents the requirements regarding the chosen test method, conventions used within the ATS, the Test Suite Structure and Test Purposes (TSS&TP) for ISUP v3 supplementary services.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".
- [2] ISO/IEC 9646-3 (1996): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [3] ISO/IEC 9646-7 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".
- [4] ETSI EN 300 008-1 (V1.3): "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.701, Q.702, Q.703, Q.704, Q.705, Q.706, Q.707 and Q.708 modified]".
- [5] ETSI EN 300 356-1 (V3.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1997), modified]".
- [6] ETSI EN 300 356-3 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 3: Calling Line Identification Presentation (CLIP) supplementary service [ITU-T Recommendation Q.731, clause 3 (1993), modified]".
- [7] ETSI EN 300 356-4 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 4: Calling Line Identification Restriction (CLIR) supplementary service [ITU-T Recommendation Q.731, clause 4 (1993), modified]".
- [8] ETSI EN 300 356-5 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 5: Connected Line Identification Presentation (COLP) supplementary service [ITU-T Recommendation Q.731, clause 5 (1993), modified]".
- [9] ETSI EN 300 356-6 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 6: Connected Line Identification Restriction (COLR) supplementary service [ITU-T Recommendation Q.731, clause 6 (1993), modified]".



- [10] ETSI EN 300 356-7 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 7: Terminal Portability (TP) supplementary service [ITU-T Recommendation Q.733, clause 4 (1993), modified]".
- [11] ETSI EN 300 356-8 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 8: User-to-User Signalling (UUS) supplementary service [ITU-T Recommendation Q.737, clause 1 (1997), modified]".
- [12] ETSI EN 300 356-9 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 9: Closed User Group (CUG) supplementary service [ITU-T Recommendation Q.735, clause 1 (1993), modified]".
- [13] ETSI EN 300 356-10 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 10: Subaddressing (SUB) supplementary service [ITU-T Recommendation Q.731, clause 8 (1992), modified]".
- [14] ETSI EN 300 356-11 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 11: Malicious Call Identification (MCID) supplementary service [ITU-T Recommendation Q.731, clause 7 (1997), modified]".
- [15] ETSI EN 300 356-12 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 12: Conference Call, add-on (CONF) supplementary service [ITU-T Recommendation Q.734, clause 1 (1993), modified]".
- [16] ETSI EN 300 356-14 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 14: Explicit Call Transfer (ECT) supplementary service [ITU-T Recommendation Q.732, clause 7 (1996), modified]".
- [17] ETSI EN 300 356-15 (V3.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 15: Diversion supplementary services [ITU-T Recommendation Q.732, clauses 2 to 5 (1997), modified]".
- [18] ETSI EN 300 356-16 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 16: Call Hold (HOLD) supplementary service [ITU-T Recommendation Q.733, clause 2 (1993), modified]".
- [19] ETSI EN 300 356-17 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 17: Call Waiting (CW) supplementary service [ITU-T Recommendation Q.733, clause 1 (1992), modified]".
- [20] ETSI EN 300 356-18 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service [ITU-T Recommendation Q.733, clause 3 (1997), modified]".
- [21] ETSI EN 300 356-19 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 19: Three-Party (3PTY) supplementary service [ITU-T Recommendation Q.734, clause 2 (1996), modified]".
- [22] ETSI EN 300 356-20 (V3.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 20: Completion of Calls on No Reply (CCNR) supplementary service".
- [23] CCITT Recommendation Q.707 (1988): "Testing and maintenance".
- [24] ITU-T Recommendation Q.730 (1997): "ISDN User Part supplementary services".
- [25] ITU-T Recommendation Q.731 (1993): "Stage 3 description for number identification supplementary services using Signalling System No. 7".

- [26] ITU-T Recommendation Q.731.1 (1996): "Stage 3 description for number identification supplementary services using Signalling System No. 7; Direct-dialling-in (DDI)".
- [27] ITU-T Recommendation Q.732.2: "Stage 3 description for call offering supplementary services using Signalling System No. 7: Call diversion services: call forwarding, call forwarding no reply, call forwarding unconditional, call deflection".
- [28] ITU-T Recommendation Q.733.5 (1999): "Signalling System No. 7 - Completion of calls on no reply".
- [29] ITU-T Recommendation Q.734.1 (1993): "Stage 3 description for multiparty supplementary services using Signalling System No. 7: Conference calling".
- [30] ITU-T Recommendation Q.735.1 (1993): "Stage 3 description for community of interest supplementary services using Signalling System No. 7: Closed user group".
- [31] ITU-T Recommendation Q.735.3 (1993): "Stage 3 description for community of interest supplementary services using Signalling System No. 7; Multi-level precedence and preemption (MLPP)".
- [32] ITU-T Recommendation Q.735.6 (1996): "Stage 3 description for community of interest supplementary services using Signalling System No. 7; Global Virtual Network Service (GVNS)".
- [33] ITU-T Recommendation Q.737 (1993): "Stage 3 description for additional information transfer supplementary services using Signalling System No. 7".
- [34] ETSI EN 300 356-34 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 34: Protocol Implementation Conformance Statement (PICS) proforma specification for supplementary services".
- [35] ETSI EN 300 356-36: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 36: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for supplementary services".
- [36] ITU-T Recommendation E.164 (1997): "The international public telecommunication numbering plan".
- [37] ITU-T Recommendation Q.784.1 (1996): "ISUP basic call test specification: Validation and compatibility for ISUP'92 and Q.767 protocols".
- [38] ITU-T Recommendation Q.788 (1997): "User-network-interface to user-network-interface compatibility test specifications for ISDN, non-ISDN and undetermined accesses interworking over international ISUP".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

- terms defined in ISDN User Part (ISUP) reference specification [4] to [33];
- terms defined in ISO/IEC 9646-1 [1], ISO/IEC 9646-3 [2] and in ISO/IEC 9646-7 [3].

In particular, the following terms apply:

**Abstract Test Case (ATC):** complete and independent specification of the actions required to achieve a specific test purpose, defined at the level of abstraction of a particular Abstract Test Method, starting in a stable testing state and ending in a stable testing state (see ISO/IEC 9646-1 [1], subclause 3.3.3).

**Abstract Test Method (ATM):** description of how an IUT is to be tested, given at an appropriate level of abstraction to make the description independent of any particular realization of a Means of Testing, but with enough detail to enable abstract test cases to be specified for this method (see ISO/IEC 9646-1 [1], subclause 3.3.5).

**Abstract Test Suite (ATS):** test suite composed of abstract test cases (see ISO/IEC 9646-1 [1], subclause 3.3.6).

**Implementation Under Test (IUT):** implementation of one or more OSI protocols in an adjacent user/provider relationship, being part of a real open system which is to be studied by testing (see ISO/IEC 9646-1 [1], subclause 3.3.43).

**ISDN number:** number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [36].

**Means of Testing (MOT):** combination of equipment and procedures that can perform the derivation, selection, parameterization and execution of test cases, in conformance with a reference standardized ATS, and can produce a conformance log (see ISO/IEC 9646-1 [1], subclause 3.3.54).

**PICS proforma:** document in the form of a questionnaire, which when completed for an implementation or system becomes the PICS.

**PIXIT proforma:** document in the form of a questionnaire, which when completed for the IUT becomes the PIXIT.

**Point of Control and Observation:** point within a testing environment where the occurrence of test events is to be controlled and observed, as defined in an Abstract Test Method (see ISO/IEC 9646-1 [1], subclause 3.3.64).

**Pre-test condition:** setting or state in the IUT which cannot be achieved by providing stimulus from the test environment.

**Protocol Implementation Conformance Statement (PICS):** statement made by the supplier of a protocol claimed to conform to a given specification, stating which capabilities have been implemented (see ISO/IEC 9646-1 [1], subclause 3.3.39 and subclause 3.3.80).

**Protocol Implementation eXtra Information for Testing (PIXIT):** statement made by a supplier or implementor of an IUT (protocol) which contains or references all of the information related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT (see ISO/IEC 9646-1 [1], subclause 3.3.41 and subclause 3.3.81).

**System Under Test (SUT):** real open system in which the IUT resides (see ISO/IEC 9646-1 [1], subclause 3.3.103).

**User:** access protocol entity at the User side of the user-network interface where a T reference point or coincident S and T reference point applies.

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

|      |  |
|------|--|
| 3PTY | Three Party service                        |
| ASE  | Application Service Entity                 |
| ASP  | Abstract Service Primitive                 |
| ATC  | Abstract Test Case                         |
| ATM  | Abstract Test Method                       |
| ATS  | Abstract Test Suite                        |
| CCBS | Completion of Calls to Busy Subscriber     |
| CD   | Call Deflection                            |
| CDIV | Call DIVersion                             |
| CFB  | Call Forwarding Busy                       |
| CFNR | Call Forwarding No Reply                   |
| CFU  | Call Forwarding Unconditional              |
| CLI  | Calling Line Identity                      |
| CLIP | Calling Line Identification Presentation   |
| CLIR | Calling Line Identification Restriction    |
| COL  | Connected Line Identity                    |
| COLP | Connected Line Identification Presentation |
| COLR | Connected Line Identification Restriction  |
| CONF | Conference call, add-on                    |

|         |   |
|---------|---|
| CUG     | Closed User Group                                     |
| CW      | Call Waiting  |
| DDI     | Direct Dialling-In                                    |
| DLE     | Destination Local Exchange                            |
| DSS1    | Digital Subscriber System No. 1                       |
| ECT     | Explicit Call Transfer                                |
| HOLD    | Call Hold   |
| IncIE   | Incoming International Exchange                       |
| IntermE | Intermediate Exchange                                 |
| ISC     | International Switching Centre                        |
| ISDN    | Integrated Services Digital Network                   |
| ISUP    | ISDN User Part  |
| ITE     | International Transit Exchange                        |
| IUT     | Implementation Under Test                             |
| IWorkE  | Interworking Exchange                                 |
| LAPD    | Link Access Protocol for the D-channel                |
| LT      | Lower Tester  |
| MCID    | Malicious Call Identification                         |
| MOT     | Means Of Testing                                      |
| MSN     | Multiple Subscriber Number                            |
| MTC     | Main Test Component                                   |
| MTP     | Message Transfer Part                                 |
| NNI     | Network-network interface                             |
| NTE     | National Transit Exchange                             |
| OLE     | Originating Local Exchange                            |
| OutIE   | Outgoing International Exchange                       |
| PCO     | Point of Control and Observation                      |
| PDU     | Protocol Data Unit                                    |
| PICS    | Protocol Implementation Conformance Statement         |
| PIXIT   | Protocol Implementation eXtra Information for Testing |
| PSTN    | Public Switched Telephone Network                     |
| SP      | Signalling Point                                      |
| SUB     | Sub-addressing  |
| SUT     | System Under Test                                     |
| TCAP    | Transaction Capabilities Application Part             |
| TCP     | Test Coordination Procedures                          |
| TP      | Terminal portability                                  |
| TP      | Test Purpose (context dependent)                      |
| TSS     | Test Suite Structure                                  |
| TTCN    | Tree and Tabular Combined Notation                    |
| UNI     | User-network interface                                |
| UT      | Upper Tester  |
| UUS     | User-to-user signalling                               |
| UUS1    | User-to-user signalling service 1                     |
| UUS2    | User-to-user signalling service 2                     |
| UUS3    | User-to-user signalling service 3                     |

The ISUP message acronyms can be found in table 2 of ITU-T Recommendation Q.762 as endorsed by EN 300 356-1 [5].

### 3.2.1 ISUP abbreviations

The following abbreviations apply for ISUP parameters and parameter values.

|          |   |
|----------|---|
| ACH      | Access signalling PCO (D-channel)         |
| APH      | Access physical circuit PCO (B-channel)   |
| addCgPN  | additional Calling Party Number           |
| addConNb | additional Connected Number               |
| AdSg     | Address Signals                           |
| APRI     | Address Presentation Restricted Indicator |
| ATP      | Access Transport Parameter                |
| BCI      | Backward Call Indicators                  |

|         |                                   |
|---------|-----------------------------------|
| CAB     | PCO for AB circuits               |
| CAC     | PCO for AC circuits               |
| CC      | Country Code                      |
| CCBSpar | CCBS parameter                    |
| CDInf   | Call Diversion Information        |
| CDmo    | Call Diversion may occur          |
| CdPSI   | Called Party's Status Indicator   |
| CgPN    | Calling Party Number              |
| CHInf   | Call History Information          |
| ConNb   | Connected Number                  |
| CTNb    | Call Transfer Number              |
| CTRef   | Call Transfer Reference           |
| CUGIC   | CUG Interlock Code                |
| FCI     | Forward Call Indicators           |
| GenNb   | Generic Number                    |
| GenNot  | Generic Notification              |
| IA      | Incoming Access                   |
| ICB     | Incoming Calls Barred             |
| IPI     | ISUP Preference Indicator         |
| LAB     | PCO for signalling link AB        |
| LAC     | PCO for signalling link AC        |
| LOPInd  | LOop Prevention Indicators        |
| NoInd   | No Indication                     |
| NSO     | Notification Subscription Option  |
| OA      | Outgoing Access                   |
| OBCI    | Optional Backward Call Indicators |
| OFCI    | Optional Forward Call Indicators  |
| OriCdNb | Original Called Number            |
| PDC     | Propagation Delay Counter         |
| PTC     | Parallel Test Component           |
| RgInd   | Redirecting Indicator             |
| RgNb    | Redirecting Number                |
| RnCnt   | Redirection Counter               |
| RnInf   | Redirection Information           |
| RnNb    | Redirection Number                |
| RnNbRes | Redirection Number Restriction    |
| RnReas  | Redirection Reason                |
| ScrI    | Screening Indicator               |
| ServAct | Service Activation                |
| USI     | User Service Information          |
| USIp    | User Service Information prime    |
| UUInd   | User-to-User Indicators           |
| UUInf   | User-to-User Information          |

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[SIST EN 300 356-35 V3.1.2:2005](https://standards.iteh.ai/catalog/standards/sist/62345a3a-0b85-479d-94f0-1e024/sist-en-300-356-35-v3-1-2-2005)

<https://standards.iteh.ai/catalog/standards/sist/62345a3a-0b85-479d-94f0-1e024/sist-en-300-356-35-v3-1-2-2005>

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## 4 Implementation under test and test methods

### 4.1 Identification of the system and implementation under test

The System Under Test (SUT) is an exchange. The implementation under test (IUT) is the ISUP v3 implementation in this exchange, mainly the part responsible for the supplementary services functionality, as shown in figure 1.

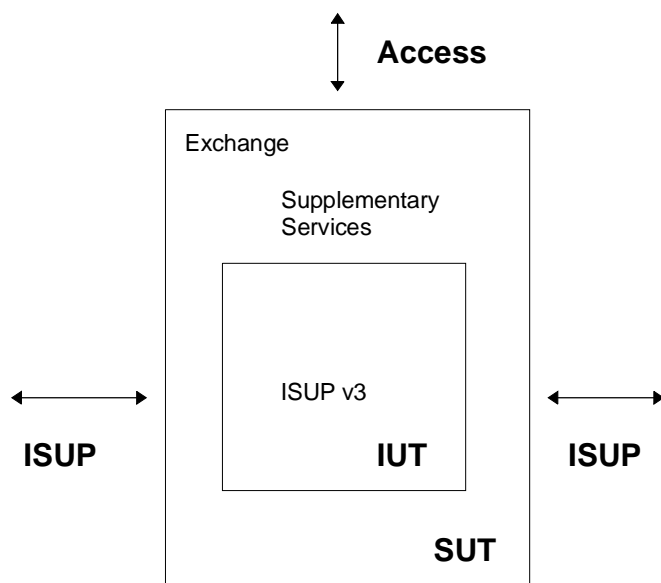


Figure 1: System Under Test

The ISUP signalling protocol can be observed on the SS No. 7 link on the Network-Network Interface (NNI). The effects of signalling procedures of the ISDN User Part can be observed on the circuits controlled by the ISUP on the NNI.

The ISUP implementation will in some exchanges have to interwork with the Access signalling system on the user-network interface (UNI) and involve call handling in order to establish end-to-end connections.

From the ISUP reference standard several types of exchanges (or roles) can be identified as presented in figure 2.

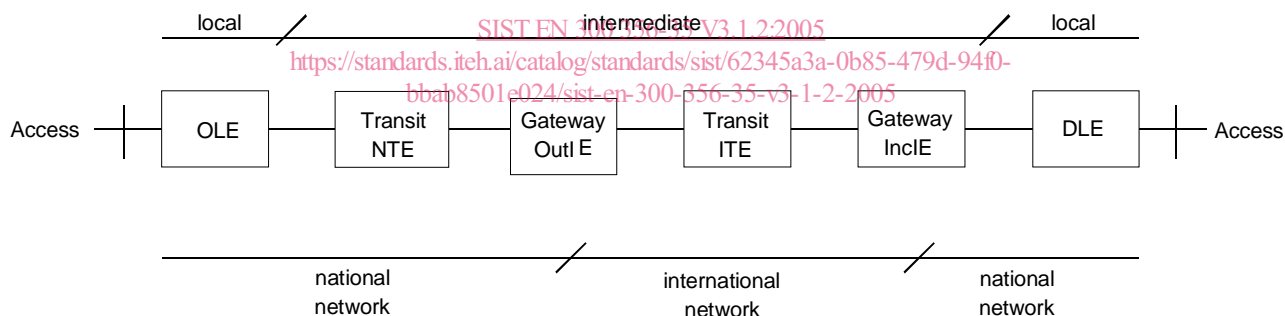


Figure 2: Roles of exchanges

The exchanges can be divided into two main groups according to their functionality: local exchanges, where calls originate and terminate, and intermediate exchanges, with transit functionality. Local exchanges are national, i.e. belong to a national network. Intermediate exchanges are national or international. The international intermediate exchanges which permit access to the international network are the gateway exchanges (incoming and outgoing), also called ISCs (International Switching Centres). A particularity for some supplementary services, e.g. call diversion services, is that a local exchange is not only originator/terminator of the call but also mediator between two far-end local exchanges. The roles of the exchanges are summarized in table 1.

Table 1: Roles of exchanges

|                            | Local Exchange | Intermediate Exchange |               |
|----------------------------|----------------|-----------------------|---------------|
|                            |                | National              | International |
| Originating Local Exchange | OLE            |                       |               |
| Transit Exchange           |                | NTE                   | ITE           |
| Incoming/Gateway Exchange  |                |                       | InclE         |
| Outgoing/Gateway Exchange  |                |                       | OutIE         |
| Destination Local Exchange | DLE            |                       |               |

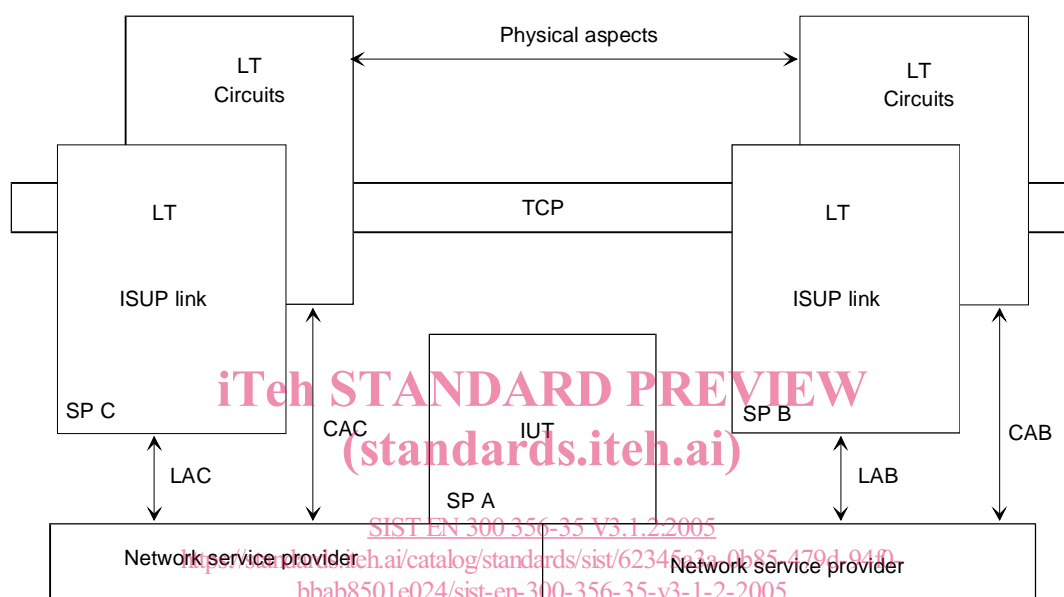
## 4.2 ATM and testing configuration for ISUP v3

The Abstract Test Method (ATM) chosen for the ISUP v3 supplementary services testing specification is the distributed multi-party test method. The ATM is defined at an appropriate level of abstraction so that the test cases may be specified appropriately, without adding restrictions to the implementation under test. The testing architectures are described in the following subclauses.

The ATS is written in concurrent TTCN.

### 4.2.1 Intermediate exchanges

The configuration proposed for testing intermediate exchanges is shown in figure 3. In order to test the protocol and functionality of transit and gateway exchanges one needs to consider the incoming and outgoing side of the SUT.



**Figure 3: ISUP test method for intermediate exchanges**

The IUT is observed and controlled from two signalling links with ISUP associated circuits. The points of control and observation (PCO) are labelled LAB and CAB on one side, and LAC and CAC on the other.

The LAB and LAC PCOs are used by the lower testers (LT) for controlling the ISUP signalling link, whereas the CAB and CAC PCOs are used by the lower testers for observing circuit related events, such as connectivity, echo control check, alerting tone, etc.

The ISUP PDUs to be sent and observed on the LAB PCO side allow for PDU constraints to be specified and coded down to the bit level.

The underlying network service provider is the Message Transfer Part (MTP) protocol.

Figure 4 shows the actual used configuration for intermediate exchanges, with a main testing component (MTC), responsible for the A-B interface and a slave parallel testing component (PTC), responsible for the C-A interface.

The test coordination procedures (TCP) allow for communication between the testers. The test components are mostly implicitly coordinated (asynchronously); the TCPs are only used when it is necessary to obtain the verdict from the parallel test component.