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Inteligentno omrežje (IN) - Aplikacijski del inteligentnega omrežja (INAP) - Nabor zmožnosti 2 (CS2) - 3. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP) - Specifikacija za funkcijo preklapljanja storitev (SSF) - 2. podpoglavje: Obdelava stranke v klicu (CPH)

Intelligent Network (IN); Intelligent Network Application Protocol (INAP); Capability Set 2 (CS2); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for Service Switching Function (SSF); Sub-part 2: Call Party Handling (CPH)

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 3, sub-part 2 of a multi-part EN covering the Intelligent Network Application Protocol (INAP) capability set 2, as identified below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for Service Switching Function (SSF)";

Sub-part 1: "Basic capability set of CS-1 including CS-2 complements";

Sub-part 2: "Call Party Handling (CPH)";

Sub-part 3: "Specialized Resource Functions (SRF)";

Part 4: "Abstract Test Suite (ATS) specification and Partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for Service Switching Function (SSF)";

Part 5: "Distributed Functional Plane (DFP) [ITU-T Recommendation Q.1224 [2] (1997) modified]".

National transposition dates	
Date of adoption of this EN:	28 April 2000
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1 Scope

The present document contains the Test Suite Structure and Test Purposes (TSS&TP) for Call Party Handling (CPH), part of CoreINAP CS2. It complements the initial document EN 301 140-3-1 [1] dedicated to general introduction and TSS&TPs for CoreINAP CS1.

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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ETSI EN 301 140-3-1: "Intelligent Network (IN); Intelligent Network Application Protocol (INAP); Capability Set 2 (CS2); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for Service Switching Function (SSF); Sub-part 1: Basic capability set of CS-1 including CS-2 complements".

[2] ITU-T Recommendation Q.1224: "Distributed functional plane for intelligent network Capability Set 2".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 140-3-1 [1] apply.

3.2 Abbreviations

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

BCSM	Basic Call State Model
CCF	Call Control Function
CPH	Call Party Handling
CS	Cabability Set
CS	Call Segment
CV	Connection View
INAP	Intelligent Network Application Protocol
MSC	Message Sequence Chart
PDU	Protocol Data Unit
PIXIT	Protocol Implementation eXtra Information for Testing
SCF	Service Control Function
SDL	Service and Description Language
SRF	Specialized Resource Function
SSF	Service Switching Function
SSP	Service Switching Point
TCAP	Transaction Capabilities Application Part

TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

4 Void

See EN 301 140-3-1 [1].

5 Void

See EN 301 140-3-1 [1].

6 Void

See EN 301 140-3-1 [1].

7 TSS and TP for CPH functions

7.0 Introduction

The Call Party Handling (CPH) includes a set of operations related to the call handling at the switch. The whole functionality of the CPH operations is presented by means of the four Core Capabilities (ITU-T Recommendation Q.1224 [2]):

- Core Capability one: allows the user to enter information during a midcall event;
- Core Capability two: is the ability of the SSF/CCF to connect a call party to an external resource to perform a transfer;
- Core Capability three is the ability of the SSF/CCF to present the current call view to the SCF;
- Core Capability four: is the ability of the SSF/CCF to combine separate calls into one a single call.

The Test Purposes related to CPH are classified into 3 categories:

1) TP for the test of Conformance of each CPH procedure: this forms a set of TPs testing the basic functionality of CPH operations;
2) TP for the test of the Switch capabilities: a group of TPs that tests the switch capability of handling different calls at the same time;
3) Arming/Detecting rules.

7.1 Preambles and postambles for CPH

7.1.1 Names of preambles and postambles

CPH requires a large set of preambles. Due to the complexity of their description, the Connection View (CV) model is used for an understanding of the configuration, referring to the following CV objects:

- CallSegmentAssociation (always initial);
- CallSegment;

- Connection point;
- Legs.

NOTE 1: The controlling leg can be either joined, shared or surrogate. The controlling leg identifies the physical access to the end user.

NOTE 2: The legs are named by the LegId, and there is an unique correspondence between a LegId and a BCSM.

Restrictions: The test configuration is limited to three passive legs within a call segment, and three call segments within a call segment association.

Comment on T preambles: The preamble T_OS (and all preambles and test cases which use this preamble) contains reference to an ASP Mgt_SetTriggerTable. This does not exist in the protocol, but in the SDL model it identifies which Trigger Detection points need to be set before commencing the test case.

Based on these considerations, using the naming conventions indicated in subclause 4.5.4 of EN 301 140-3-1 [1], and in addition to the CS1 preambles, which are:

O_OS_null_null;

O_S2P_null_null.

CPH uses the following preambles:

- Originating

O_OH(1)_S2P_null(1)

O_OH(1)_OH(1)_S2P

O_null_OH(2)_S2P

O_null_OH(2)_S2P_controlling (To test the event report rules)

O_null_OH(2)_S2P_passive (To test the event report rules)

O_null_S2P_OH(3)

O_S2P_OH(1)_OH(3)

O_S2P_OH(2)_OH(3)

O_S2P_OH(3)_OH(3)

O_null_S3P_null

O_null_S3P_OH(3)

O_null_null_S4P

O_null_null_S4P_controlling (To test the event report rules)

O_null_null_S4P_passive (To test the event report rules)

O_null_S4P_OH(3)

- Terminating

T_TS_null_null

T_S2P_null_null

T_S2P_null_null_controlling (To test the event report rules)

T_S2P_null_null_passive (To test the event report rules)

T_OH(1)_S2P_null

T_null_OH(2)_S2P

T_null_S3P_null

T_null_null_S4P

T_null_null_S4P_controlling (To test the event report rules)

T_null_null_S4P_passive (To test the event report rules)

T_TF(2)_null_null

- Initiate Call Attempt (network initiated)

I_S1P_null_null

I_null_TF(2)_null

I_null_TF(2)_null_passive(To test the event report rules)

I_null_null_TF(3)

I_S1P_S1P_null

I_S1P_S1P_null _passive(To test the event report rules)

I_null_TF(2)_S1P

I_S1P_S1P_S1P

7.1.2 Preamble trees

Each preamble is composed of a limited set of operations (listed below) with the indication of the main parameters used. These operations are shown in the preamble descriptions:

- CWA (ContinueWithArgument): CsId;
- CON (Connect): LegToBeCreated (default = 2), CsID;
- ICA (InitiateCallAttempt): LegToBeCreated (default = 1), newCallSegment (default = 1);
- MC (MergeCallSegments): sourceCallSegment, targetCallSegment;
- SL (SplitLeg): LegToBeSplit, newCallSegmentID;
- IDP (Initial Detection Point): trigger;
- RRB (RequestReportBCSMEvent): LegID, eventTypeBCSM.

Each operation shows the value of the required parameters, knowing that the leg numbers successively take the values 1, 2, 3, etc. In the case of CS, the same number is reused when a CS returns to idle following a mergeCallSegment.

The preamble trees are defined in subclause 7.1.6, where each branch or each preamble is numbered 1, 2, 3, etc., except when there is an alternative or a node of two possible branches, which are then numbered 4-1 and 4-2 for example.

Each preamble shows the state from where it starts (idle or a different state reached by the execution of another preamble), then it shows the operations executed in this preamble and finally the state or configuration reached, using the notation described above.

7.1.3 TTCN-like notation for preamble description

The notation used to describe the trees and the required operations to move from one preamble to the next one, is a TTCN-like notation, showing what is sent (character !) and received (character ?) by the co-ordination points (CPs) addressing either Signalling Control or user A (CP1-1) or B (CP1-2) or C (CP1-3), etc., or by the main tester L1 playing the role of the SCF.

7.1.4 Representation of preamble/postamble and test purposes using MSCs

In addition to the TTCN-like notation, an MSC is drawn from the SDL simulator to represent each preamble or postamble. For each test purpose, an MSC is also given, in addition to the tabular description of each TP.

Each MSC shows the interface between SCF and SSF using TCAP primitives, and the signalling control points. As there can be any number of signalling control points (from 1 up to 8), the MSC shows SigCon A in one column, while all the other SigCon are merged in a second column. The parameter CallRef number makes it possible to identify the SigCon concerned, SigCon B being number 2, SigCon C being 3, etc.

7.1.5 How to interpret the parameters and their values as used in the MSCs

The MSCs show the exchanges of PDUs of the TCAP protocol, as well as the Core INAP protocol. PDUs of both protocols use parameters.

The list of the parameters for the Core INAP protocol is given in reference EN 301 140-3-1 [1].

The list of parameters for the TCAP protocol is repeated here for each TCAP primitive. Note that only mandatory parameters are used.

TCAP primitives from SCF to TCAP:

TC_InvokeReq (InvokeID, DialogueID, Class, OperationCode, Timeout);

TC_BeginReq (DialogueID, OriginatingAddress);

TC_ContinueReq (DialogueID, OriginatingAddress);

TC_EndReq (DialogueID, Termination);

TC_AbortReq (DialogueID).

TCAP primitives from TCAP to SCF:

TC_InvokeInd (InvokeID, DialogueID, Class, OperationCode, LastComponent);

TC_BeginInd (DialogueID, OriginatingAddress, ComponentPresent);

TC_ContinueInd (DialogueID, OriginatingAddress, ComponentPresent);

TC_EndInd (DialogueID, Termination, ComponentPresent);

TC_AbortInd (DialogueID);

TC_ErrorInd (InvokeID, DialogueID, ErrorCode, LastComponent);

TC_ReturnResultInd (InvokeID, DialogueID, LastComponent, OperationCode, OperationArg);

TC_RejectInd (InvokeID, DialogueID).

The values of these parameters are either mandatory and imposed by the specifications, or they are informative only and chosen arbitrarily in ranges compatible with the specifications.

The list of the informative parameters, for which a value is to be assigned in particular for the execution of a test suite, is included in the PIXIT proforma.

Annex B and Annex C of the present document contain a copy of the PIXIT proforma parameter tables of respectively the TCAP and the Core INAP protocols. These proforma tables are filled up and contain the parameter values used for the definition of the MSCs and TPs.

7.1.6 Preamble descriptions

7.1.6.1 O (originating) preamble tree

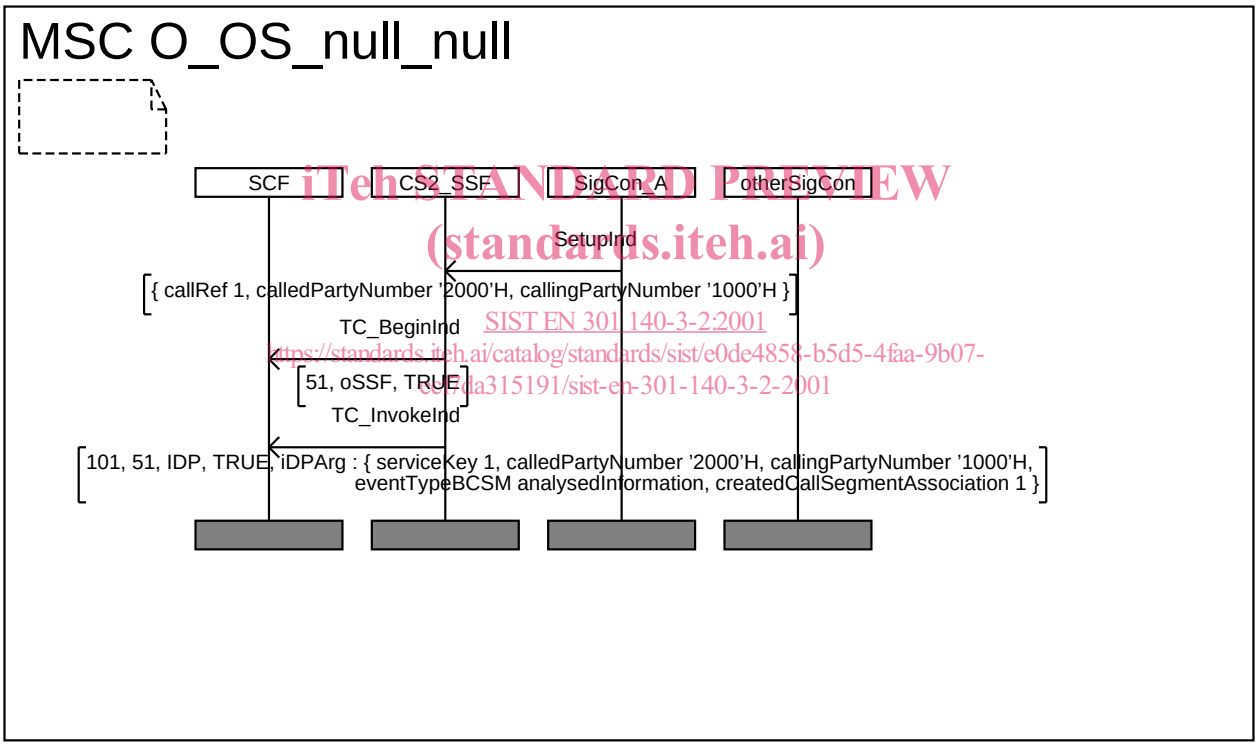
Preamble O_OS_null_null

O_null

CP1-1! SetUpInd

L1? InitialDP

O_OS_null_null



2 - Preamble O_S2P_null_null

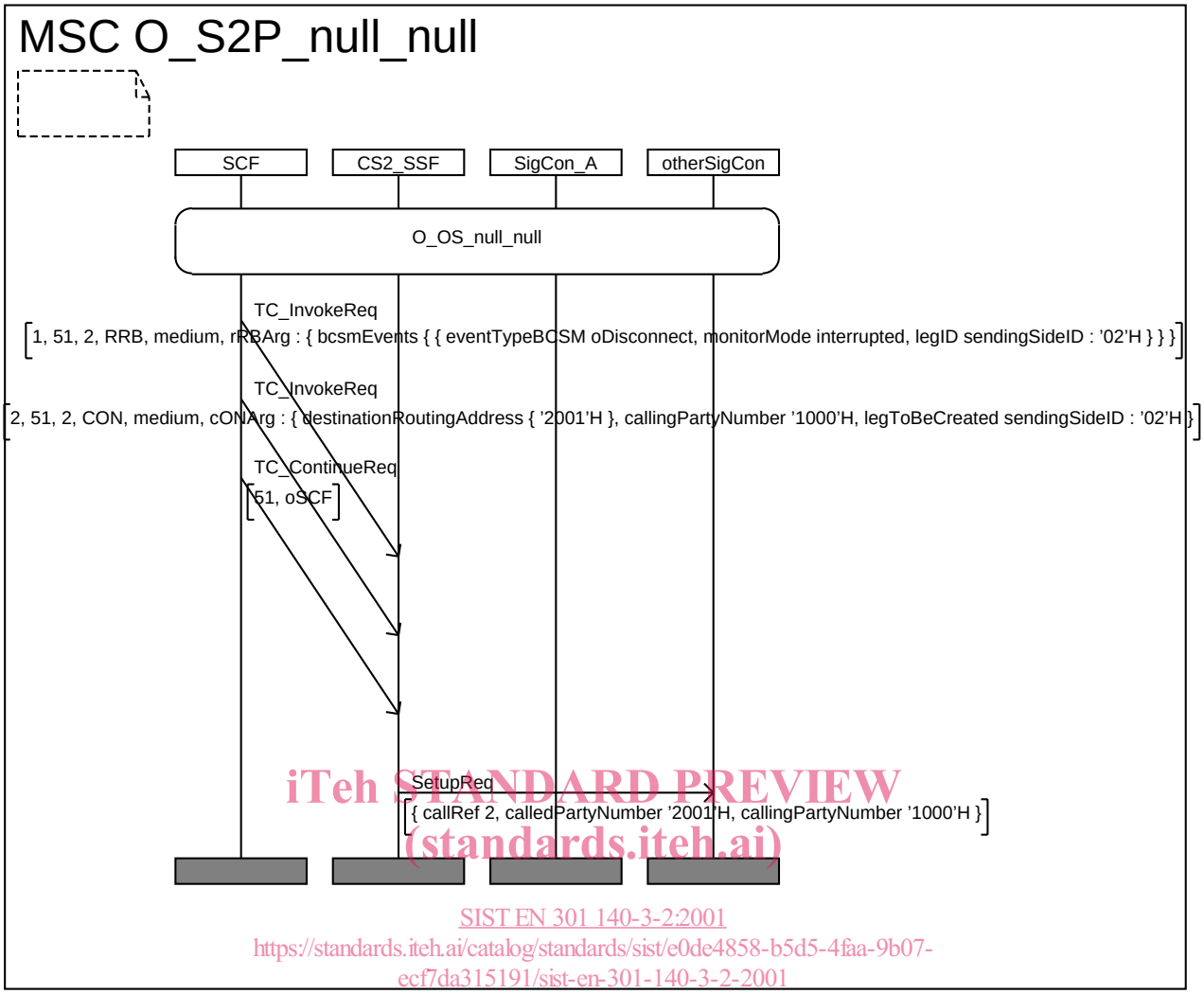
O_OS_null_null

L1! RequestReportBCSMEvent(2,oDisconnect)

L1! Connect(2,1)

CP1-2? SetUpReq

O_S2P_null_null



3 - Preamble O_OH(1)_S2P_null

O_S2P_null_null

L1! SplitLeg(1,2)

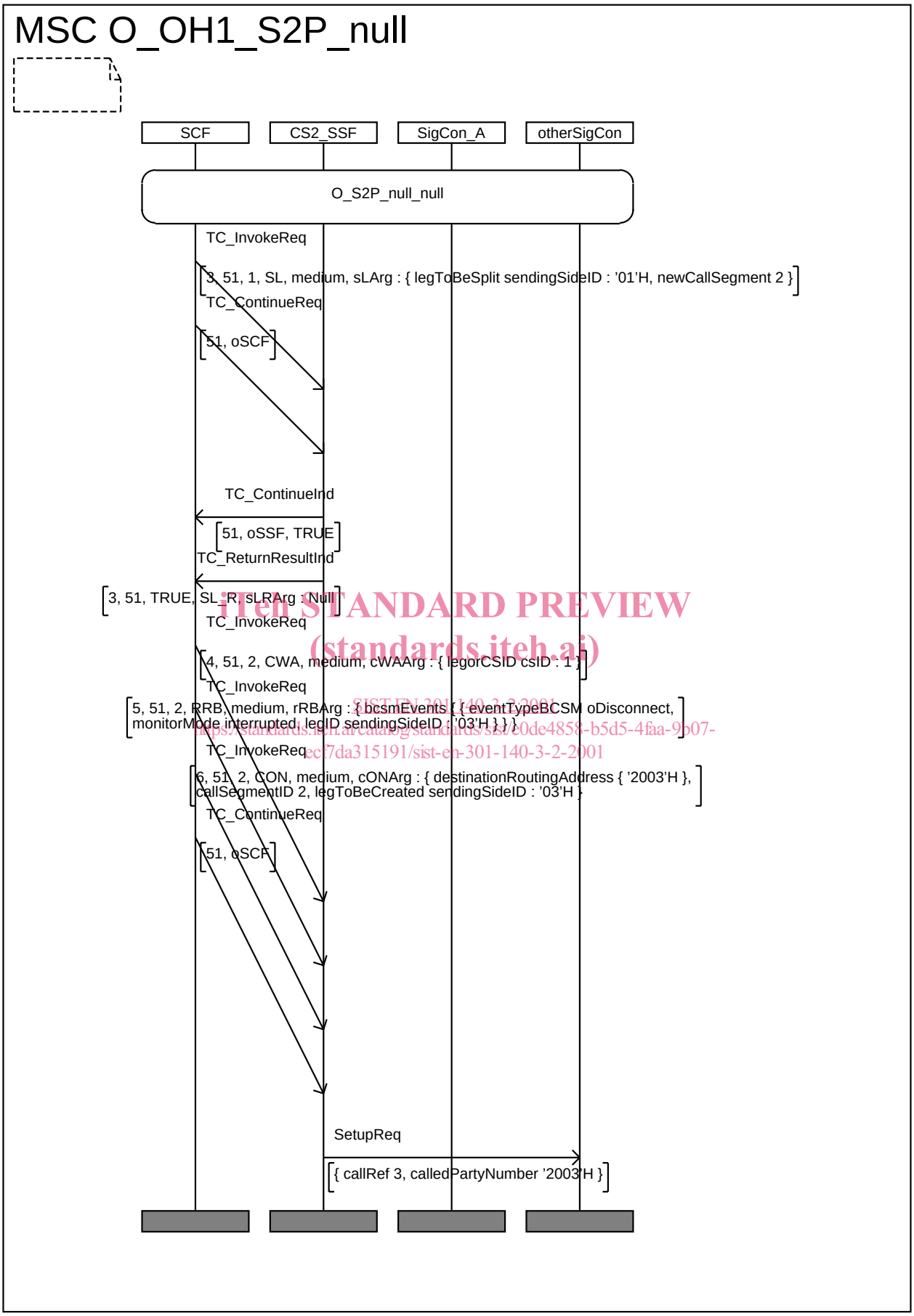
L1?SplitLegReturnResult

L1! ContinueWithArgument (CsID = 1)
L1! RequestReportBCSMEvent(3,oDisconnect)

L1! Connect(3,2)

CP1-3? SetUpReq

O_OH(1)_S2P_null



4 1 - Preamble O_OH(1)_OH(1)_S2P