SLOVENSKI STANDARD
SIST EN 300 324-1 V1.2.3:2005

01-april-2005

Vmesniki V pri digitalnih krajevnih centralah (LE) – Vmesnik V5.1 za podporo dostopovnemu omrežju (AN) – 1. del: Specifikacija vmesnika V5.1

V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1.2.3-2005

Ta slovenski standard je istoveten z: **EN 300 324-1 Version 1.2.3**

ICS:

33.040.30	Komutacijski in signalizacijski sistem	Switching and signalling systems

SIST EN 300 324-1 V1.2.3:2005 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 300 324-1 V1.2.3:2005

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

EN 300 324-1 V1.2.3 (1999-06)

European Standard (Telecommunications series)

V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

Reference
REN/SPS-09050-1 (30090iq0.PDF)

Keywords
V interface, V5 interface, LE, AN

ETSI

Postal address
F-06921 Sophia Antipolis Cedex - FRANCE

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - 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
Sous-Préfecture de Grasse (06) N° 7803/88

SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/1729b964-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

Internet
secretariat@etsi.fr
Individual copies of this ETSI deliverable
can be downloaded from
http://www.etsi.org
If you find errors in the present document, send your
comment to: editor@etsi.fr

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 1999.
All rights reserved.

Contents

Intellectual Property Rights 14
Foreword 14
Introduction 15
1 Scope 17
2 References 18
3 Definitions, symbols and abbreviations 19
3.1 Definitions 19
3.2 Symbols and abbreviations 21
4 Electrical and physical interface requirements 23
5 Procedural interface requirements 28
6 Services and architecture aspects and requirements 31
6.1 On-demand services 31
6.1.1 PSTN 31
6.1.2 ISDN Basic Access (ISDN-BA) 32
6.2 Permanent Line (PL) capability 32
6.3 Semi-permanent leased line 32
6.4 Permanent leased line services 33
7 Control and provisioning 34
7.1 Control principles 34
7.1.1 General requirements and assumptions 34
7.1.2 Control of ISDN user port for the PL capability 36
7.1.2.1 Statements and assumptions 36
7.1.2.2 ISDN and PL capability 36
7.1.2.3 Decoupling of AN and LE FSM 36
7.2 Provisioning strategy and requirements 36
7.2.1 General 36
7.2.2 Provisioning requirements 36
8 Protocol architecture and multiplexing structure 38
8.1 Functional description 38
8.2 Protocol requirements for PSTN and ISDN 39
8.3 Time slots 40
8.4 Time slot allocation for C-channels 40
8.5 L2 sublayering and multiplexing on C-channels 41
8.6 L3 multiplexing 41
8.7 Congestion control 41
8.7.1 Flow control end to end 41
8.7.2 Congestion control on the V5.1 interface 41
8.7.3 Blocking of ISDN user ports at L2 41
8.7.4 Flow control using LAPV5-DL mechanisms 42
9 Envelope Function sublayer of LAPV5 (LAPV5-EF) 42
9.1 Frame structure for peer-to-peer communication 42
9.1.1 General 42
9.1.2 Flag sequence 42
9.1.3 Interframe time fill 42
9.1.4 Envelope function address field 42
9.1.5 Envelope information field 43
9.1.6 Transparency 43
9.1.7 FCS 43
9.1.8 Format convention 43
9.1.9 Invalid frames 43

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-0fd5559ddd02/sist-en-300-324-1-v1-2-3-2005

9.1.10 Frame aborts 43
9.2 Format of fields for data link envelope peer-to-peer communication 44
9.2.1 Envelope function address field format 44
9.2.2 Address field variables 44
9.2.2.1 Address field extension bit 44
9.2.2.2 EFaddr 44

10 Data link sublayer of LAPV5 (LAPV5-DL) 44
10.1 Frame structure for peer-to-peer communication 44
10.1.1 General 44
10.1.2 Link address field 45
10.1.3 Control field 45
10.1.4 Information field 45
10.1.5 Format convention 45
10.2 Invalid frames 45
10.3 Elements of procedures and formats of fields for data link sublayer peer-to-peer communication 45
10.3.1 Link address field format 45
10.3.2 Link address field variables 45
10.3.2.1 Address field extension (EA) bit 45
10.3.2.2 Command/response field bit 45
10.3.2.3 V5DLaddr 46
10.3.3 Control field formats 46
10.3.4 Control field parameters and associated state variables 46
10.3.5 Frame types 46
10.4 Definition of the peer-to-peer procedures of the data link sublayer 46
10.4.1 General 46
10.4.2 Procedure for the use of the Poll/Final (P/F) bit 48
10.4.3 Terminal Endpoint Identifier (TEI) management procedures 48
10.4.4 Automatic negotiation of data link layer parameters 48
10.4.5 Procedures for establishment and release of multiple frame operation 48
10.4.5.1 Establishment of multiple frame operation 48
10.4.5.1.1 General 48
10.4.5.1.2 Establishment procedures 49
10.4.5.1.3 Procedure on expiry of timer T200 49
10.4.5.2 Information transfer 50
10.4.5.3 Termination of multiple frame operation 50
10.4.5.4 Link-not-established state 50
10.4.5.5 Collision of unnumbered commands and responses 50
10.4.5.5.1 Identical transmitted and received commands 50
10.4.5.5.2 Different transmitted and received commands 50
10.4.5.6 Unsolicited DM response and SABME command 50
10.4.6 Procedures for information transfer in multiple frame operation 51
10.4.7 Re-establishment of multiple frame operation 51
10.4.7.1 Criteria for re-establishment 51
10.4.7.2 Procedures 51
10.4.8 Exception condition reporting and recovery 51
10.4.9 List of system parameters 52
10.4.10 Data link monitor function 52
10.4.10.1 General 52
10.4.10.2 Data link layer supervision in the multiple-frame-established state 52
10.4.10.3 Connection verification procedures 52
10.4.11 PSTN and control data link FSM and requirements 52
10.4.11.1 General 52
10.4.11.2 Data link FSM 53

11 AN frame relay sublayer 55
11.1 General 55
11.2 Invalid frames 55
11.3 Detailed description of the AN frame relay function 56
11.3.1 Frame received from LE 56
11.3.2 Frame received from ISDN user port 56

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

12 Sublayer-to-sublayer communication and MF 57
12.1 LAPV5-EF to LAPV5-DL communication 57
12.2 LAPV5-DL to LAPV5-EF communication 57
12.3 AN-FR to LAPV5-EF communication 57
12.4 LAPV5-EF to AN-FR communication 57

13 PSTN signalling protocol specification and L3 multiplexing 57
13.1 General 57
13.1.1 Introduction 57
13.1.2 Separation of responsibilities 58
13.1.3 National specific PSTN signal information elements 58
13.2 PSTN protocol entity definition 59
13.2.1 Definition of PSTN path states and explanation 59
13.2.1.1 Path states in the AN (AN(PSTN)) 59
13.2.1.2 Path states in the LE (LE(PSTN)) 59
13.2.2 Definition of PSTN protocol primitives, messages and timers 60
13.3 PSTN protocol message definition and content 61
13.3.1 Establish 62
13.3.2 Establish ACK 62
13.3.3 Signal 63
13.3.4 Signal ACK 63
13.3.5 Status 63
13.3.6 Status enquiry 64
13.3.7 Disconnect 64
13.3.8 Disconnect complete 64
13.3.9 Protocol parameter 65
13.4 General message format and information element coding 65
13.4.1 Overview 65
13.4.2 Protocol discriminator 66
13.4.3 L3addr 66
13.4.4 Message type 66
13.4.5 Coding of other information elements 67
13.4.6 Single octet information elements 68
13.4.6.1 Pulse notification 68
13.4.6.2 Line-information 68
13.4.6.3 State 68
13.4.6.4 Autonomous-signalling-sequence 69
13.4.6.5 Sequence-response 69
13.4.7 Information elements with variable length format 69
13.4.7.1 Sequence-number 69
13.4.7.2 Cadenced-ringing 70
13.4.7.3 Pulsed-signal 71
13.4.7.4 Steady-signal 72
13.4.7.5 Digit-signal 73
13.4.7.6 Recognition-time 74
13.4.7.7 Enable-autonomous-acknowledge 74
13.4.7.8 Disable-autonomous-acknowledge 75
13.4.7.9 Cause 76
13.4.7.10 Resource-unavailable 77
13.4.7.11 Enable-metering 77
13.4.7.12 Metering-report 78
13.4.7.13 Attenuation 79
13.5 PSTN call control procedures 79
13.5.1 General 80
13.5.2 Handling of error conditions 80
13.5.2.1 Protocol discriminator error 81
13.5.2.2 L3addr error 81
13.5.2.3 Message type error 81
13.5.2.4 Information element out of sequence 82
13.5.2.5 Repeated information elements 82
13.5.2.6 Mandatory information element missing 82

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

13.5.2.7 Unrecognized information element 83
13.5.2.8 Content error of mandatory information element 83
13.5.2.9 Content error of optional information element 83
13.5.2.10 Unexpected message 84
13.5.2.11 Optional information element not allowed 84
13.5.2.12 Optional information element missing 84
13.5.2.13 Status enquiry procedure 84
13.5.2.14 Status procedure 85
13.5.3 Path related procedures 86
13.5.3.1 Path initiation by AN 87
13.5.3.1.1 Subscriber seizure request 87
13.5.3.1.2 Subscriber seizure confirmation 87
13.5.3.2 Path initiation by LE 88
13.5.3.2.1 Establish request 88
13.5.3.2.2 Establish acknowledge 89
13.5.3.3 Path collision 89
13.5.3.3.1 Originating call prevail 90
13.5.3.3.2 Destination call prevail 90
13.5.3.4 Path active 90
13.5.3.4.1 Normal operation 90
13.5.3.4.2 Exceptional procedures 91
13.5.3.5 Disconnecting path 91
13.5.3.5.1 Disconnect request 92
13.5.3.5.2 Disconnect acknowledge 93
13.5.3.6 Line information procedure 93
13.5.3.6.1 Normal operation 93
13.5.3.6.2 Exceptional procedures 94
13.5.4 Non-path related procedures 94
13.5.4.1 Protocol parameter procedures 94
13.5.4.1.1 Normal operation 94
13.5.4.1.2 Exceptional procedures 94
13.5.4.2 Port blocking procedures 95
13.5.4.3 Restart procedure 95
13.5.5 L3 error detection procedure 96
13.5.5.1 Multiple SIGNAL message operation - variables, sequence numbers and timers 96
13.5.5.1.1 Modulus 96
13.5.5.1.2 Send sequence variable S(S) 96
13.5.5.1.3 Acknowledge sequence variable S(A) 96
13.5.5.1.4 Send sequence number M(S) 96
13.5.5.1.5 Receive sequence variable S(R) 96
13.5.5.1.6 Receive sequence number M(R) 97
13.5.5.1.7 Timer Tt 97
13.5.5.1.8 Timer Tr 97
13.5.5.2 Multiple SIGNAL message operation - procedures 97
13.5.5.2.1 Initialization 97
13.5.5.2.2 Sending a SIGNAL message 97
13.5.5.2.3 Sending a SIGNAL ACK message 97
13.5.5.2.4 Receiving a SIGNAL message 97
13.5.5.2.5 Receiving a SIGNAL ACK message 97
13.5.5.2.6 Start of timer Tr 98
13.5.5.2.7 Stop of timer Tr 98
13.5.5.2.8 Timeout of timer Tr 98
13.5.5.2.9 Start of timer Tt 98
13.5.5.2.10 Stop of timer Tt 98
13.5.5.2.11 Timeout of timer Tt 98
13.5.5.2.12 Receiving a DISCONNECT message 98
13.5.5.3 Multiple SIGNAL message operation - values 98
13.5.5.3.1 Number of outstanding SIGNAL messages 98
13.5.5.3.2 Timer Tt 98
13.5.5.3.3 Timer Tr 98

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

13.6 List of system parameters 99
13.7 AN and LE side state tables 99

14 Control requirements and protocol 105
14.1 ISDN user port status indication and control protocol 105
14.1.1 General aspects 105
14.1.2 Events and function elements relevant for the control of the state machines 107
14.1.3 ISDN user port FSMs, AN (ISDN port) and LE (ISDN port) 109
14.1.3.1 Description of the states 109
14.1.3.2 Definition of port control states 110
14.1.3.2.1 ISDN user port FSM - AN (ISDN port) 110
14.1.3.2.2 ISDN User port FSM - LE (ISDN port) 110
14.1.3.3 Principles and procedures 111
14.1.3.3.1 General 111
14.1.3.3.2 Blocking 111
14.1.3.3.3 Blocking request 111
14.1.3.3.4 Co-ordinated unblocking 112
14.1.3.3.5 Activation 112
14.1.3.4 ISDN port FSM at the AN 113
14.1.3.5 ISDN port FSM at the LE 115
14.1.4 Performance monitoring aspects 115
14.2 PSTN user port status indication and control protocol 116
14.2.1 General aspects 116
14.2.2 Events and function elements relevant for the control of the state machines 116
14.2.3 PSTN user port FSM, AN (PSTN port) and LE (PSTN port) 117
14.2.3.1 Description of the states 117
14.2.3.2 Definition of port control states 117
14.2.3.2.1 PSTN user port FSM - AN (PSTN port) 117
14.2.3.2.2 PSTN user port FSM - LE (PSTN port) 118
14.2.3.3 Principles and procedures 118
14.2.3.3.1 General 118
14.2.3.3.2 Blocking 118
14.2.3.3.3 Blocking request 118
14.2.3.3.4 Co-ordinated unblocking 119
14.2.3.4 PSTN port FSM at the AN 119
14.2.3.5 PSTN port FSM at the LE 119
14.3 Interface L1 maintenance requirements and protocol 120
14.3.1 Events and failure reports 120
14.3.2 Detection algorithm for events and signals 121
14.3.3 V5.1 interface L1 FSM 121
14.3.4 Requirements and procedures for the additional functions 122
14.4 Control protocol 122
14.4.1 Control protocol message definition and content 122
14.4.1.1 PORT CONTROL message 123
14.4.1.2 PORT CONTROL ACK message 123
14.4.1.3 COMMON CONTROL message 124
14.4.1.4 COMMON CONTROL ACK message 124
14.4.2 General message format and information element coding 124
14.4.2.1 Overview 124
14.4.2.2 Protocol discriminator information element 125
14.4.2.3 L3addr information element 125
14.4.2.4 Message type information element 125
14.4.2.5 Other information elements 126
14.4.2.5.1 Coding rules 126
14.4.2.5.2 Performance grading information element 126
14.4.2.5.3 Rejection cause information element 126
14.4.2.5.4 Control function element information element 127
14.4.2.5.5 Control function ID information element 127
14.4.2.5.6 Variant information element 128
14.4.2.5.7 Interface ID information element 128
14.4.3 State definitions of the control protocol 129

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

14.4.3.1 Port control protocol 129
14.4.3.2 Common control protocol 129
14.4.4 Control protocol procedures 129
14.4.4.1 General 129
14.4.4.2 Handling of error conditions 130
14.4.4.2.1 Protocol discriminator error 130
14.4.4.2.2 L3addr error 130
14.4.4.2.3 Message type error 130
14.4.4.2.4 Repeated information elements 130
14.4.4.2.5 Mandatory information element missing 131
14.4.4.2.6 Unrecognized information element 131
14.4.4.2.7 Content error of mandatory information elements 131
14.4.4.2.8 Content error of conditional information element 131
14.4.4.2.9 Conditional information element not allowed 131
14.4.4.3 Start traffic indication 131
14.4.4.4 Stop traffic indication 132
14.4.4.5 Port control protocol procedure 132
14.4.4.6 Common control protocol procedure 133
14.4.4.7 Timers for the control protocol 133
14.4.4.8 AN and LE side state tables 134
14.5 V5.1 re-provisioning procedures 135
14.5.1 General aspects 135
14.5.2 Events and states 136
14.5.2.1 Events 136
14.5.2.2 Definition of the AN and LE states for the re-provisioning procedures 136
14.5.3 Re-provisioning FSMs 136
14.5.3.1 AN (variant&ID) and LE (variant&ID) state tables for the verification procedure 137
14.5.3.2 AN (re-pro) and LE (re-pro) state tables for the re-provisioning synchronization procedure 137
14.5.4 Procedures 138
14.5.4.1 Request variant and ID 138
14.5.4.2 Verify re-provisioning 138
14.5.4.3 Re-provisioning synchronization 139
14.5.4.4 Restart procedure 139

Annex A (normative): Requirements for the support of the PL capability through an ISDN-BA 140

Annex B (normative): Assumptions and requirements for the support of semi-permanent leased lines 141

B.1 General 141
B.2 Signalling associated with semi-permanent leased lines 141
B.3 User ports 141
B.4 Requirements for non-ISDN user ports for semi-permanent leased lines 142

Annex C (normative): Basic requirements of the system management functions in AN and LE 143

Annex D (normative): Use of the protocol information elements for national PSTN protocols 156

D.1 Introduction 156
D.2 The placement of information elements 157
D.2.1 Information elements within the ESTABLISH message 157
D.2.2 Information elements within the ESTABLISH-ACK message 157
D.2.3 Information elements within the SIGNAL message 158
D.2.4 Information elements within the DISCONNECT message 158
D.2.5 Information elements within the DISCONNECT-COMPLETE message 158
D.2.6 Information elements within the PROTOCOL-PARAMETER message 159

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

D.3 The information elements 159
D.3.1 Line-information information elements 159
D.3.1.1 Impedance marker reset 159
D.3.1.2 Impedance marker set 159
D.3.1.3 Low loop impedance 159
D.3.1.4 Anomalous loop impedance 160
D.3.1.5 Anomalous line condition received 160
D.3.2 Pulse-notification information element 160
D.3.3 Autonomous-signalling-sequence information element 160
D.3.4 Sequence-response information element 160
D.3.5 Cadenced-ringing information element 160
D.3.6 Pulsed-signal information element 161
D.3.6.1 The pulse type 161
D.3.6.2 The suppression indicator 161
D.3.6.2.1 Suppression indicator value 00 161
D.3.6.2.2 Suppression indicator value 01 161
D.3.6.2.3 Suppression indicator value 10 161
D.3.6.2.4 Suppression indicator value 11 161
D.3.6.3 The pulse duration type 162
D.3.6.4 The acknowledgement request indicator 162
D.3.6.5 The number of pulses 162
D.3.7 Use of pulsed signals 162
D.3.7.1 Pulsed normal polarity 162
D.3.7.2 Pulsed reverse polarity 162
D.3.7.3 Pulsed battery on C-wire 162
D.3.7.4 Pulsed on-hook 162
D.3.7.5 Pulsed reduced battery 163
D.3.7.6 Pulsed no battery 163
D.3.7.7 Meter pulse 163
D.3.7.8 Initial ring 163
D.3.7.9 Pulsed off-hook 163
D.3.7.10 Pulsed b-wire connected to earth 163
D.3.7.11 Register recall (timed open loop) 163
D.3.7.12 Earth loop pulse 163
D.3.7.13 50 Hz pulse 163
D.3.7.14 Pulsed b-wire connected to battery 163
D.3.7.15 Pulsed a-wire connected to earth 163
D.3.7.16 Pulsed a-wire connected to battery 163
D.3.7.17 Pulsed c-wire connected to earth 163
D.3.7.18 Pulsed c-wire disconnected 164
D.3.7.19 Pulsed normal battery 164
D.3.7.20 Pulsed a-wire disconnected 164
D.3.7.21 Pulsed b-wire disconnected 164
D.3.7.22 Ramp to reversed polarity 164
D.3.7.23 Ramp to normal polarity 164
D.3.8 Use of steady signals 164
D.3.8.1 Normal-polarity 164
D.3.8.2 Reversed-polarity 164
D.3.8.3 Battery on c-wire 164
D.3.8.4 No battery on c-wire 164
D.3.8.5 Off hook (loop closed) 164
D.3.8.6 On hook (loop open) 165
D.3.8.7 Battery on a-wire 165
D.3.8.8 No battery on b-wire 165
D.3.8.9 Reduced battery 165
D.3.8.10 No battery 165
D.3.8.11 Alternate reduced power/no power 165
D.3.8.12 No battery on a-wire 165
D.3.8.13 Normal battery 165
D.3.8.14 Stop ringing 165

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-ff1359adb2/sist-en-300-324-1-v1.2.3-2005

D.3.8.15 Start pilot frequency 165
D.3.8.16 Stop pilot frequency 165
D.3.8.17 A-wire on earth 165
D.3.8.18 Low impedance on b-wire 166
D.3.8.19 B-wire connected to earth 166
D.3.8.20 B-wire disconnected from earth 166
D.3.8.21 Battery on b-wire 166
D.3.8.22 Low loop impedance 166
D.3.8.23 High loop impedance 166
D.3.8.24 Anomalous loop impedance 166
D.3.8.25 A-wire disconnected from earth 166
D.3.8.26 C-wire on earth 166
D.3.8.27 C-wire disconnected from earth 166
D.3.9 Digit-signal information element 166
D.3.10 Recognition-time information element 167
D.3.11 Enable-autonomous-acknowledge information element 167
D.3.11.1 Suppression indicator value 00 167
D.3.11.2 Suppression indicator value 01 167
D.3.11.3 Suppression indicator value 10 167
D.3.11.4 Suppression indicator value 11 167
D.3.12 Default values for the Enable-autonomous-acknowledge information element 168
D.3.13 Use of the Autonomous-signalling-sequence 168
D.3.14 Disable-autonomous-acknowledge information element 168
D.3.15 Enable-metering information element 168
D.3.15.1 The pulse type 168
D.3.15.2 The rate type 168
D.3.15.3 The reporting pulse count 168
D.3.15.4 The repetition indicator 169
D.3.15.5 The suppression indicator 169
D.3.15.6 The pulse duration type 169
D.3.16 Metering-report information element 169
D.3.16.1 The pulse count 169
D.3.16.2 The Report type 169
D.3.16.2.1 Report type value 00 169
D.3.16.2.2 Report type value 01 169
D.3.16.2.3 Report type value 10 169
D.3.16.2.4 Report type value 11 170
D.3.16.3 The failure reason 170
D.3.17 Attenuation information element 170

D.4 Signalling sequences in the event of failure of a V5.1 interface to return a user port to the idle condition before releasing the signalling path 170
D.4.1 Protocol implications of going directly to the NULL state 170
D.4.2 Protocol implications of going to the BLOCKED state 171

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

D.5 Leaving the BLOCKED state 171
D.6 Pre-defined PSTN port states 171
D.7 The line parked condition 171
D.8 Information element meaning 171
D.9 Coding of pulse duration types 172
D.10 Ring signals and their placement in V5 messages 172
D.11 Resource unavailable 172

Annex E (informative): Service scenarios, architecture and functional definition of access arrangements with AN at the LE 173

E.1 Conclusions on multiple V5 interface applications 173
E.2 Conclusions on architecture aspects 173
E.3 Implementation of Q_{AN} 174

Annex F (informative): The concept and requirements for the upgrade of a V5.1 interface to a V5.2 interface 175

Annex G (informative): Use of function element primitives in the V5 PSTN protocol 176

G.1 Introduction 176
G.2 FE primitives used in the PSTN protocol entity in the AN 176
G.2.1 FE-subscriber_seizure 176
G.2.2 FE-subscriber_release 176
G.2.3 FE-line_information 177
G.2.4 FE-line_signal 177
G.3 FE primitives used in the PSTN protocol entity in the LE 177
G.3.1 FE-establish_request 177
G.3.2 FE-establish_acknowledge_indication 177
G.3.3 FE-establish_indication 178
G.3.4 FE-establish_acknowledge 178
G.3.5 FE-disconnect_request 178
G.3.6 FE-disconnect_complete_request 178
G.3.7 FE-line_signal_request 178
G.3.8 FE-line_signal_indication 179
G.3.9 FE-protocol_parameter_request 179
G.3.10 FE-disconnect_complete_indication 179

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/1d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

Annex H (informative): PSTN protocol; explanatory notes and information flow 180
H.1 Explanatory notes 180
H.2 Information flow diagrams 182
Annex J (informative): AN requirement for pulse dialling 185
Annex K (informative): L3 error detection procedure 186
K.1 Variables and sequence numbers 186
K.2 Values of counters and timers 187
K.3 Procedures 187
K.4 Examples of the error detection mechanism 187
Annex L (informative): SDL diagrams 189
L.1 SDL diagrams for the AN side 189
L.1.1 System description 189
L.1.2 Block descriptions 191
L.1.2.1 Block description of the PSTN protocol 191
L.1.2.2 Block description of the control protocol 192
L.1.2.3 Block description of the ISDN port status FSM 193
L.1.2.4 Block description of the PSTN port status FSM 193
L.1.2.5 Block description of the system management 194
L.1.3 Explanation of SDL symbols 195
L.1.4 PSTN protocol procedure 195
L.1.4.1 Scope 195
L.1.4.2 Path states 195
L.1.4.3 SDLs 196
L.1.5 Control protocol procedures 208
L.1.5.1 Scope 208
L.1.5.2 States 208
L.1.5.3 SDLs 208
L.1.5.3.1 Port control protocol 209
L.1.5.3.2 Common control protocol 211
L.1.6 Port status FSM control 213
L.1.6.1 Scope 213
L.1.6.2 States 213
L.1.6.3 SDLs 213
L.1.6.3.1 ISDN port status FSM control 214
L.1.6.3.2 PSTN port status FSM control 222
L.1.7 System management procedure 225
L.1.7.1 Scope 225
L.1.7.2 States 225
L.1.7.3 SDLs 225
L.2 SDL diagrams for the LE side 236
L.2.1 System description 236
L.2.2 Block descriptions 238
L.2.2.1 Block description of the PSTN protocol 238
L.2.2.2 Block description of the control protocol 239
L.2.2.3 Block description of the ISDN port status FSM 240
L.2.2.4 Block description of the PSTN port status FSM 240
L.2.2.5 Block description of the system management 241
L.2.3 Explanation of SDL symbols 241
L.2.4 PSTN protocol procedure 242
L.2.4.1 Scope 242
L.2.4.2 Path states 242
L.2.4.3 SDLs 242
L.2.5 Control protocol procedures 252

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7e3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005

L.2.5.1 Scope 252
L.2.5.2 States 252
L.2.5.3 SDLs 252
L.2.5.3.1 Port control protocol 253
L.2.5.3.2 Common control protocol 255
L.2.6 Port status FSM control 257
L.2.6.1 Scope 257
L.2.6.2 States 257
L.2.6.3 SDLs 257
L.2.6.3.1 ISDN port status FSM control 258
L.2.6.3.2 PSTN port status FSM control 263
L.2.7 System management procedure 266
L.2.7.1 Scope 266
L.2.7.2 States 266
L.2.7.3 SDLs 266

Annex M (informative): Structures used in the V5.1 interface 279

Annex N (informative): Protocol architecture for PSTN and ISDN user port control 280

N.1 Scope 280

N.2 ISDN user port status control 280
N.2.1 Functional split between LE and AN 280
N.2.2 Information transfer between LE and AN 280
N.2.3 Activation/deactivation procedure 281

N.3 PSTN user port control - information transfer between LE and AN 282

Annex P (informative): Items identified to be pre-defined or provisioned 283

Annex Q (informative): Bibliography 284

Annex R (informative): Index 285

History 287

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 324-1 V1.2.3:2005
https://standards.iteh.ai/catalog/standards/sist/17d4b864-a065-4b9e-b7c3-61d3539eadb2/sist-en-300-324-1-v1-2-3-2005