



**Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 12: Supplementary services stage 3;
Sub-part 4: Call Forwarding (CF)**

*iTeh STANDARD PREVIEW
(status: draft)
Full standard: https://standards.iteh.ai/catalog/standards/sist/805/04-b9b5-4711-ad37-83f06f756225/etsi-en-300-392-12-4-v1-4-0-2016-07*

Reference

REN/TETRA-03229

Keywords

CF, late entry, radio, stage 3, supplementary service, TETRA, V+D

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
Sous-Préfecture de Grasse (06) N° 7803/88

Important noticeThe present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at
<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2016.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	9
Foreword.....	9
Modal verbs terminology.....	10
Introduction	11
1 Scope	12
2 References	12
2.1 Normative references	12
2.2 Informative references.....	13
3 Definitions, symbols and abbreviations	14
3.1 Definitions	14
3.2 Symbols.....	16
3.3 Abbreviations	16
4 Signalling protocol for the support of SS-CF.....	18
4.1 SS-CF description	18
4.2 SS-CF services offered over the TNSS-SAP.....	18
4.2.0 General.....	18
4.2.1 ACTIVATE request.....	19
4.2.2 ACTIVATE ACK indication	20
4.2.3 DELETE request.....	20
4.2.4 DELETE ACK indication.....	20
4.2.5 DISABLE request.....	21
4.2.6 DISABLE ACK indication	21
4.2.7 ENABLE request.....	21
4.2.8 ENABLE ACK indication	22
4.2.9 INFORM2 indication.....	22
4.2.10 INFORM5 indication.....	22
4.2.11 INFORM8 indication.....	22
4.2.12 INFORM9 indication.....	23
4.2.13 INTERROGATE request.....	23
4.2.14 INTERROGATE ACK indication.....	23
4.2.15 INTERROGATE2 request.....	23
4.2.16 INTERROGATE2 ACK indication	24
4.2.17 CHANGE ACTIVATION request.....	24
4.2.18 CHANGE ACTIVATION ACK indication.....	24
4.2.19 PARAMETERISE request.....	25
4.2.20 PARAMETERISE ACK indication.....	25
4.2.21 INTERROGATE STATUS request.....	26
4.2.22 INTERROGATE STATUS ACK indication	26
4.3 Parameter description	26
5 Signalling procedures for the support of SS-CF.....	29
5.1 SS-CF operational requirements.....	29
5.1.1 Requirements on the originating SwMI.....	29
5.1.2 Requirements on the served user SwMI	29
5.1.3 Requirements on the forwarded-to SwMI.....	29
5.1.4 Requirements on the re-routeing SwMI.....	30
5.1.5 Requirements on a forward switching SwMI	30
5.1.6 Requirements on the served or authorized user visited SwMI.....	30
5.2 SS-CF Coding requirements.....	30
5.2.1 SS-CF PDUs	30
5.2.1.0 General.....	30
5.2.1.1 ACTIVATE PDU.....	30
5.2.1.2 ACTIVATE ACK PDU	31
5.2.1.3 DELETE PDU.....	31
5.2.1.4 DELETE ACK PDU	32

5.2.1.5	DISABLE PDU	33
5.2.1.6	DISABLE ACK PDU	34
5.2.1.7	ENABLE PDU	34
5.2.1.8	ENABLE ACK	35
5.2.1.9	INFORM2 PDU	35
5.2.1.10	INFORM4 PDU	36
5.2.1.11	INFORM5 PDU	37
5.2.1.12	INFORM8 PDU	37
5.2.1.13	INFORM9 PDU	38
5.2.1.14	INTERROGATE PDU	39
5.2.1.15	INTERROGATE ACK PDU	39
5.2.1.16	INTERROGATE2 PDU	40
5.2.1.17	INTERROGATE2 ACK PDU	40
5.2.1.18	REPORT PDU	40
5.2.1.19	CHANGE ACTIVATION PDU	41
5.2.1.20	CHANGE ACTIVATION ACK PDU	42
5.2.1.21	PARAMETERISE PDU	42
5.2.1.22	PARAMETERISE ACK PDU	43
5.2.1.23	INTERROGATE STATUS PDU	43
5.2.1.24	INTERROGATE STATUS ACK PDU	44
5.2.2	TETRA PDU information element coding	45
5.2.2.1	Accept/reject	45
5.2.2.1a	Activated forwarding types and basic services	45
5.2.2.2	Activating/activation changing/deleting/parameterising user type	45
5.2.2.2a	Activation/deactivation	45
5.2.2.3	Activation by served user	45
5.2.2.4	Addressing information elements	46
5.2.2.4.1	General on addresses	46
5.2.2.4.2	Address type of the authorized user	46
5.2.2.4.3	Address type of the forwarded-to user	46
5.2.2.4.4	Address type of the last forwarding user	46
5.2.2.4.5	Address type of the originally called user	47
5.2.2.4.6	Address type of the served user	47
5.2.2.5	Basic service information	47
5.2.2.6	CF-PDU type	48
5.2.2.7	Enabled authorized user definition	49
5.2.2.8	External subscriber number	49
5.2.2.9	External subscriber number digit	49
5.2.2.10	Forwarded-to definition	49
5.2.2.10a	Forwarded-to user address	50
5.2.2.10b	Forwarding types and basic services	50
5.2.2.10c	Forwarding types and basic services present	51
5.2.2.11	Forwarding types	51
5.2.2.11a	Interrogating user type	51
5.2.2.12	Invoked call forwarding type	51
5.2.2.13	Last forwarding type	52
5.2.2.14	Number of external subscriber number digits	52
5.2.2.15	Original forwarding type	52
5.2.2.15a	Parameters addition/removal	52
5.2.2.16	Reject cause	52
5.2.2.17	Served user definition	53
5.2.2.18	SS-CF invocation counter	53
5.2.2.19	SS type	53
5.2.3	Additional coding requirements over the ISI	53
5.3	SS-CF State Definitions	55
5.3.1	General on state definitions	55
5.3.2	States at the calling user MS	55
5.3.3	States at the originating SwMI	55
5.3.4	States at the Served User MS	56
5.3.5	States at the served user SwMI	56
5.3.6	States at the forwarded-to user MS	56
5.3.7	States at the forwarded-to SwMI	56

5.3.8	States at the re-routeing SwMI	56
5.3.9	States at the authorized user MS	56
5.3.10	States at the Activating SwMI	56
5.3.11	States at the deactivating user MS	56
5.3.12	States at the deactivating SwMI.....	56
5.3.13	States at the interrogating user MS	56
5.3.14	States at the interrogating SwMI.....	56
5.4	SS-CF signalling procedures	56
5.4.1	Actions at MSs.....	56
5.4.1.1	Activation requesting user MS	56
5.4.1.1.1	Normal operation.....	56
5.4.1.1.2	Exceptional procedures.....	57
5.4.1.2	Deletion requesting user MS	57
5.4.1.2.1	Normal operation for served or authorized user MS	57
5.4.1.2.2	Exceptional procedures for served or authorized user MS	57
5.4.1.2.3	Normal operation for forwarded-to user MS	57
5.4.1.2.4	Exceptional procedures for forwarded-to user MS	58
5.4.1.3	Interrogation requesting user MS	58
5.4.1.3.1	Normal operation of interrogation	58
5.4.1.3.2	Exceptional procedures for interrogation services.....	58
5.4.1.4	Interrogation requesting forwarded-to user MS	58
5.4.1.4.1	Normal operation of interrogation	58
5.4.1.4.2	Exceptional procedures for interrogation	58
5.4.1.5	Unsolicited indication to the served user	58
5.4.1.6	Invocation and operation at MS	58
5.4.1.6.1	General on SS-CF invocation indications.....	58
5.4.1.6.2	Notification to the calling user	59
5.4.1.6.3	Additional indication to the calling user.....	59
5.4.1.6.4	Notification to the forwarded-to user.....	59
5.4.1.6.5	Additional indication to the forwarded-to user.....	59
5.4.1.6.6	Identification of the forwarded-to user to the calling user.....	59
5.4.1.7	Reminder notification to the served user.....	59
5.4.1.7.1	Normal operation.....	59
5.4.1.7.2	Exceptional procedures.....	59
5.4.1.8	Parameterise requesting user MS	59
5.4.1.8.1	Normal operation.....	59
5.4.1.8.2	Exceptional procedures.....	60
5.4.1.9	Change activation requesting user MS	60
5.4.1.9.1	Normal operation.....	60
5.4.1.9.2	Exceptional procedures.....	60
5.4.1.10	Disable requesting user MS	61
5.4.1.10.1	Normal operation.....	61
5.4.1.10.2	Exceptional procedures.....	61
5.4.1.11	Enable requesting user MS.....	61
5.4.1.11.1	Normal operation.....	61
5.4.1.11.2	Exceptional procedures.....	61
5.4.2	Actions at the originating SwMI.....	61
5.4.2.1	General requirements	61
5.4.2.2	Normal Procedure	62
5.4.2.3	Exceptional Procedures.....	62
5.4.3	Actions at the served user home SwMI	62
5.4.3.1	Normal Procedure	62
5.4.3.1.1	Activation	62
5.4.3.1.2	Deletion	62
5.4.3.1.3	Interrogation	63
5.4.3.1.4	Invocation and operation	63
5.4.3.1.5	Reminder notification to the served user	64
5.4.3.1.6	Parameterise	64
5.4.3.1.7	Change activation	65
5.4.3.1.8	Disabling	65
5.4.3.1.9	Enabling.....	65
5.4.3.2	Exceptional Procedures.....	65

5.4.3.2.1	Activation	65
5.4.3.2.2	Deletion	66
5.4.3.2.3	Interrogation	66
5.4.3.2.4	Invocation	66
5.4.3.2.5	Parameterise	66
5.4.3.2.6	Change activation	66
5.4.3.2.7	Disabling	66
5.4.3.2.8	Enabling	66
5.4.4	Actions at the Forwarding SwMI	66
5.4.4.1	Functionalities in the case of call forwarding by re-routeing	66
5.4.4.2	Functionalities in the case of call forwarding by forward switching	67
5.4.4.3	Normal procedure	67
5.4.4.4	Exceptional procedures	67
5.4.5	Procedures at the forwarded-to SwMI	67
5.4.5.1	Normal procedure on invocation	67
5.4.5.2	Exceptional Procedures	67
5.4.6	Procedures at the served or authorized user visited SwMI	67
5.4.6.1	Normal Procedure	67
5.4.6.2	Exceptional Procedures	67
5.4.7	Protocol for SS-CF invocation counter	67
5.5	Interworking	68
5.6	Protocol Interactions between SS-CF and other SSs and ANFs	68
5.6.1	Interactions with Ambience Listening (SS-AL)	68
5.6.2	Interactions with Call Authorized by Dispatcher (SS-CAD)	68
5.6.3	Other protocol interactions of SS-CFU	68
5.6.3.1	Interaction with Completion of Call to Busy Subscriber (SS-CCBS)	68
5.6.3.1.0	General	68
5.6.3.1.1	Originating SwMI procedures for invoking CCBS at a CFU forwarded-to user	68
5.6.3.1.2	Originating SwMI procedures if CFU is activated by SS-CCBS user A	69
5.6.3.1.3	Terminating SwMI procedures if CFU is activated by user B after CCBS has been invoked	69
5.6.3.2	Interaction with Completion of Calls on No Reply (SS-CCNR)	69
5.6.3.2.0	General	69
5.6.3.2.1	Originating SwMI procedures for invoking CCNR at a CFU diverted-to user	69
5.6.3.2.2	Originating SwMI procedures if CFU is activated by SS-CCNR user A	69
5.6.3.2.3	Terminating PINX procedures if CFU is activated by user B after CCNR has been invoked	69
5.6.3.3	Interaction with Call Forwarding Busy (SS-CFB)	69
5.6.3.4	Interaction with Call Forwarding No Reply (SS-CFNR)	69
5.6.4	Protocol interactions of SS-CFB	70
5.6.4.1	Interaction with Completion of Calls to Busy Subscriber (SS-CCBS)	70
5.6.4.1.0	General	70
5.6.4.1.1	Originating SwMI procedures for invoking CCBS at a CFB diverted-to user	70
5.6.4.1.2	Originating SwMI procedures if CFB is activated by SS-CCBS user A	70
5.6.4.1.3	Terminating SwMI procedures if CFB is activated by user B after CCBS has been invoked	70
5.6.4.2	Interaction with Completion of Calls on No Reply (SS-CCNR)	70
5.6.4.2.0	General	70
5.6.4.2.1	Originating SwMI procedures for invoking CCNR at a CFB diverted-to user	70
5.6.4.2.2	Originating SwMI procedures if CFB is activated by SS-CCNR user A	70
5.6.4.2.3	Terminating SwMI procedures if CFB is activated by user B after CCNR has been invoked	70
5.6.4.3	Interaction with Call Forwarding Unconditional (SS-CFU)	70
5.6.4.4	Interaction with Call Forwarding No Reply (SS-CFNRY)	70
5.6.4.5	Interaction with Call Waiting (SS-CW)	70
5.6.5	Protocol interactions of SS-CFNRY	70
5.6.5.1	Interaction with Completion of Calls to Busy Subscriber (SS-CCBS)	70
5.6.5.2	Interaction with Completion of Calls on No Reply (SS-CCNR)	71
5.6.5.2.0	General	71
5.6.5.2.1	Originating SwMI procedures for invoking CCNR at a CFNR diverted-to user	71
5.6.5.2.2	Originating SwMI procedures if CFNR is activated by SS-CCNR user A	71
5.6.5.2.3	Terminating SwMI procedures if CFNR is activated by user B after CCNR has been invoked	71
5.6.5.3	Interaction with Call Forwarding Unconditional (SS-CFU)	71
5.6.5.4	Interaction with Call Forwarding Busy (SS-CFB)	71
5.6.6	Other protocol interactions of SS-CFNRC	71
5.6.6.0	General	71

5.6.6.1	Protocol interactions of SS-CFNRC in the case of early CFNRC	71
5.6.6.2	Protocol interactions of SS-CFNRC in the case of late CFNRC	71
5.6.7	Protocol interactions of SS-CF with ANF-Inter-System-Interface Individual Call (ANF-ISIIC)	72
5.6.7.1	General on interactions	72
5.6.7.2	Interactions of SS-CFU with ANF-ISIIC	72
5.6.7.3	Interactions of SS-CFNRC with ANF-ISIIC	72
5.6.7.4	Interactions of SS-CFB and SS-CFNRY with ANF-ISIIC	72
5.6.8	Protocol Interactions of SS-CF with ANF Group Call	72
5.6.8.0	General	72
5.6.8.1	Protocol interactions of SS-CFU with ANF-ISIGC	72
5.6.8.2	Protocol interactions of SS-CFB with ANF-ISIGC	73
5.6.9	Protocol Interactions of SS-CF with ANF-SDS	73
5.6.10	Protocol interactions of SS-CF with ANF Mobility Management.....	74
5.6.10.0	General	74
5.6.10.1	Protocol interactions of SS-CFU, early SS-CFB and early SS-CFNRC with ANF-MM.....	76
5.6.10.2	Protocol interactions of late SS-CFB, SS-CFNRY and SS-CFNRC with ANF-MM	76
5.6.10.2.1	Protocol interactions affecting the calling user.....	76
5.6.10.2.2	Protocol interactions affecting the called/served user	76
5.6.10.2.3	Protocol interactions affecting the forwarded-to user.....	77
5.6.10.3	Interaction with SS-CF at call restoration	77
5.7	SS-CF parameter values (timers).....	78
5.8	Support of SDS and STATUS	78

Annex A (informative): Interactions of SS-CFB and SS-CFNRY with ANF-ISIIC.....79

A.1	Interactions of SS-CFB and SS-CFNRY with ANF-ISIIC	79
A.2	Interactions	79
A.2.1	Interactions of late SS-CFB and SS-CFNRY with ANF-ISIIC.....	79
A.2.2	Protocol interactions in cases 1, 10 and 11.....	82
A.2.2.1	General on cases 1, 10 and 11.....	82
A.2.2.2	Case 1	82
A.2.2.3	Case 10	83
A.2.2.4	Case 11	84
A.2.3	Protocol interactions affecting the called/served user	86
A.2.3.1	General.....	86
A.2.3.2	Case 2	86
A.2.3.3	Case 4	88
A.2.3.4	Case 5	89
A.2.3.5	Case 7	91
A.2.4	Protocol interactions affecting the forwarded-to user.....	92
A.2.4.1	General.....	92
A.2.4.2	Case 3	93
A.2.4.3	Case 6	93
A.2.4.4	Case 8	95
A.2.4.5	Case 9	97
A.2.4.6	Case 12	99

Annex B (normative): Interworking with other networks100

B.1	Procedures for interworking with public ISDNs	100
B.1.1	Actions at an incoming gateway SwMI.....	100
B.1.2	Actions at an outgoing gateway SwMI.....	100
B.1.3	Procedures where a call from the public ISDN is forwarded within or beyond TETRA	100
B.1.3.1	Normal operation	100
B.1.3.2	Exceptional procedures	100
B.1.3.3	Presentation of a forwarded call from a public ISDN to the TETRA network	101
B.1.3.3.1	Normal operation	101
B.1.3.3.2	Exceptional procedures	101
B.1.4	Procedures where a call from the TETRA network is forwarded within or beyond the public ISDN.....	101
B.1.5	Presentation of a forwarded call from a TETRA network to the public ISDN.....	102
B.1.5.1	Normal operation	102
B.1.5.2	Exceptional procedures	102

B.1.6	Procedures where a call from the public ISDN is forwarded within or beyond the TETRA network and partial re-routeing takes place in the public ISDN	103
B.1.6.1	Normal operation	103
B.1.6.2	Exceptional procedures	105
B.1.7	Procedures where a call from the public ISDN to the TETRA network is forwarded by the public ISDN....	105
B.2	SS-CF Impact of interworking with non-ISDNs	106
B.2.1	Impact of interworking on incoming calls.....	106
B.2.2	Impact of interworking on outgoing calls.....	106
Annex C (normative): SS-CF profile for mobility management.....		107
C.1	Profile exchange	107
C.2	Profile definitions	107
C.2.1	General on SS-CF profiles	107
C.2.2	PDU definitions	107
C.2.2.1	SS-PROFILE REJECT PDU	107
C.2.2.2	SS-PROFILE UPDATE PDU	107
C.2.2.3	SS-PROFILE UPDATE RESPONSE PDU	108
C.2.3	Information element definitions	108
C.2.3.1	Basic migration profile info	108
C.2.3.2	Individual basic migration profile (original and temporary).....	109
C.2.3.3	Profile type.....	110
C.2.3.4	Profile status	110
C.2.3.5	SS-information.....	110
C.2.3.6	SS-information response	110
C.2.3.7	SS-migration profile (original)	111
C.2.3.8	SS-migration profile response (temporary).....	111
C.2.3.9	SS-profile response status	111
C.2.3.10	SS-profile update indicator	111
C.2.3.11	SS-response status	112
C.2.3.12	SS-status	112
C.2.3.13	SS-type.....	112
C.2.3.14	SS-CF profiles	112
C.2.3.14.1	SS-CF migration original profile.....	112
C.2.3.14.2	SS-CF served user migration information PDU	113
C.2.3.14.3	Number of Call forwarding types information element content.....	114
Annex D (informative): Specification and Description Language (SDL) representation of procedures		115
Annex E (informative): Bibliography		116
Annex F (informative): Change Requests		117
History		119

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document is part 12, sub-part 4 of a multi-part deliverable covering Voice plus Data (V+D), as identified below:

- ETSI EN 300 392-1: "General network design";
- ETSI EN 300 392-2: "Air Interface (AI)";
- ETSI EN 300 392-3: "Interworking at the Inter-System Interface (ISI)";
- ETSI ETS 300 392-4: "Gateways basic operation";
- ETSI EN 300 392-5: "Peripheral Equipment Interface (PEI)";
- ETSI EN 300 392-7: "Security";
- ETSI EN 300 392-9: "General requirements for supplementary services";
- ETSI EN 300 392-10: "Supplementary services stage 1";
- ETSI EN 300 392-11: "Supplementary services stage 2";
- ETSI EN 300 392-12: "Supplementary services stage 3";**
 - ETSI EN 300 392-12-1: "Call Identification (CI)";
 - ETSI ETS 300 392-12-2: "Call Report (CR)";
 - ETSI EN 300 392-12-3: "Talking Party Identification (TPI)";
 - ETSI EN 300 392-12-4: "Call Forwarding (CF)";**
 - ETSI ETS 300 392-12-5: "List Search Call (LSC)";
 - ETSI EN 300 392-12-6: "Call Authorized by Dispatcher (CAD)";
 - ETSI ETS 300 392-12-7: "Short Number Addressing (SNA)";
 - ETSI EN 300 392-12-8: "Area Selection (AS)";
 - ETSI ETS 300 392-12-9: "Access Priority (AP)";
 - ETSI EN 300 392-12-10: "Priority Call (PC)";
 - ETSI ETS 300 392-12-11: "Call Waiting (CW)";
 - ETSI EN 300 392-12-12: "Call Hold (HOLD)";

ETSI EN 300 392-12-13: "Call Completion to Busy Subscriber (CCBS)";
 ETSI EN 300 392-12-14: "Late Entry (LE)";
 ETSI EN 300 392-12-16: "Pre-emptive Priority Call (PPC)";
 ETSI EN 300 392-12-17: "Include Call (IC)";
 ETSI EN 300 392-12-18: "Barring of Outgoing Calls (BOC)";
 ETSI EN 300 392-12-19: "Barring of Incoming Calls (BIC)";
 ETSI EN 300 392-12-20: "Discreet Listening (DL)";
 ETSI EN 300 392-12-21: "Ambience Listening (AL)";
 ETSI EN 300 392-12-22: "Dynamic Group Number Assignment (DGNA)";
 ETSI EN 300 392-12-23: "Call Completion on No Reply (CCNR)";
 ETSI EN 300 392-12-24: "Call Retention (CRT)";

ETSI EN 300 392-13: "SDL model of the Air Interface (AI)";

ETSI EN 300 392-14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

ETSI TS 100 392-15: "TETRA frequency bands, duplex spacings and channel numbering";

ETSI TS 100 392-16: "Network Performance Metrics";

ETSI TR 100 392-17: "TETRA V+D and DMO specifications";

ETSI TS 100 392-18: "Air interface optimized applications".

NOTE 1: Part 3, sub-parts 6 and 7 (Speech format implementation), part 4, sub-part 3 (Data networks gateway), part 10, sub-part 15 (Transfer of control), part 13 (SDL) and part 14 (PICS) of this multi-part deliverable are in status "historical" and are not maintained.

NOTE 2: Some parts are also published as Technical Specifications such as TS 100 392-2 and those may be the latest version of the document.

Proposed national transposition dates

Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Modal verbs terminology

In the present document "shall", "shall not", "should", "should not", "may", "need not", "will", "will not", "can" and "cannot" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"must" and "must not" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The supplementary service stage 3 description is preceded by the stage 1 [2] and the stage 2 [3] description of the service, according to the method described in Recommendation ITU-T I.130 [i.4]. The stage 1 description specifies the service from the user's point of view. The stage 2 description identifies the functional capabilities of each SS and the information flows needed to support the supplementary service as specified in its stage 1 description. The present stage 3 description specifies the protocols at the air interface and at the various Inter-System Interfaces (ISI) to support each Supplementary Service.

NOTE: According to Recommendation ITU-T I.130 [i.4], the stage 3 description of any telecommunication service addresses the network implementation aspects. Consequently it comprises two steps: the specifications of all protocols at the various reference points involved in any of the service procedures (notably the service operation) are the first step of the stage 3 description, and the specifications of the functions of the corresponding network entities are its second step. The latter have not been provided since they can be derived from the specification of the functional entity actions in the stage 2 description.

The present document adds parameterisation functionality for a later activation.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/18b57204-b9b5-4711-ad37-83f06f756225/etsi-en-300-392-12-4-v1.4.1-2016-07>

1 Scope

The present document specifies the stage 3 description of the Supplementary Services CFU Call Forwarding Unconditional, CFB Call Forwarding on Busy, CFNRy Call Forwarding on No Reply and CFNRc Call Forwarding on Not Reachable for the Terrestrial Trunked Radio (TETRA).

SS-CFU, SS-CFB, SS-CFNRy and SS-CFNRc are supplementary services which allow a served user to have a TETRA network send all or specific incoming calls addressed to the served user's TETRA number to another number.

Man-Machine Interface and charging principles are outside the scope of the present document.

The present document is applicable to Voice plus Data individual call or group call; some parts of the present document are applicable to SDS (Short Data Service); more specifically to the following entities:

- the MS of either the calling user or the called user during an individual call or a group call;
- the originating Switching and Management Infrastructure (SwMI) in an individual call or a group call;
- the group controlling SwMI for a group call;
- the terminating SwMI in an individual call;
- the interworking SwMI for an individual call.

The present document is based on the latest version of ECMA-174 [i.1]. Contrary to ECMA-174 [i.1], the present document does not define Call Deflection supplementary service and the present document distinguishes between the case of No Reply and the case of Not Reachable. Moreover, the present document defines the protocol in cases of group calls and of mobility not covered by ECMA-174 [i.1].

The present document also specifies additional signalling protocol requirements for the support of interactions at the ISI reference point, other supplementary services and ANFs. The present document is applicable to SwMIs that can interconnect to form a TETRA network.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [2] ETSI EN 300 392-10-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 4: Call Forwarding (CF)".
- [3] ETSI EN 300 392-11-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 4: Call Forwarding (CF)".
- [4] ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".
- [5] ETSI EN 300 392-3-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 1: General design".

- [6] ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2: Additional Network Feature Individual Call (ANF-ISIIC)".
- [7] ETSI EN 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3: Additional Network Feature Group Call (ANF-ISIGC)".
- [8] ETSI EN 300 392-3-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 4: Additional Network Feature Short Data Service (ANF-ISISDS)".
- [9] ETSI EN 300 392-10-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call Identification (CI)".
- [10] ETSI EN 300 392-12-13: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 13: Call Completion to Busy Subscriber (CCBS)".
- [11] ETSI EN 300 392-12-23: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 23: Call Completion on No Reply (CCNR)".
- [12] ETSI EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- [13] ETSI EN 300 195-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Supplementary service interactions; Part 1: Protocol specification".
- [14] ETSI EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [15] ETSI EN 300 392-3-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)".
- [16] ETSI EN 300 207-1 (V1.2.5): "Integrated Services Digital Network (ISDN); Diversion supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [17] Recommendation ITU-T E.164: "The international public telecommunication numbering plan".
- [18] Recommendation ITU-T X.219: "Remote Operations: Model, notation and service definition".
- [19] Recommendation ITU-T X.229: "Remote Operations: Protocol specification".
- [20] Recommendation ITU-T X.217: "Information technology - Open Systems Interconnection - Service definition for the Association Control Service Element".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ECMA-174: "Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Diversion Supplementary Services (QSIG-CF)".