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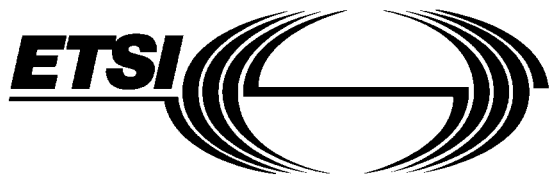
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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) Project of the European Telecommunications Standards Institute (ETSI).

This ETS is a multi-part standard and will consist of the following parts:

Part 1:   "General network design";

Part 2:   "Air Interface (AI)";

Part 3:   "Interworking at the Inter-System Interface (ISI)";

Part 4:   "Gateways basic operation";

Part 5:   "Peripheral Equipment Interface (PEI)";

Part 6:   "Line connected Station (LS)";

Part 7:   "Security";

Part 9:   "General requirements for supplementary services";

Part 10:   "Supplementary services stage 1";

Part 11:   "Supplementary services stage 2";

Part 12:   "Supplementary services stage 3";

Part 13:   "SDL model of the Air Interface (AI)";

Part 14:   "Protocol Implementation Conformance Statement (PICS) proforma specification".

Transposition dates	
Date of adoption of this ETS:	21 January 2000
Date of latest announcement of this ETS (doa):	30 April 2000
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 October 2000
Date of withdrawal of any conflicting National Standard (dow):	31 October 2000

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1 Scope

This ETS specifies the supplementary services Call Forwarding Unconditional (CFU), Call Forwarding Busy (CFB), Call Forwarding on No Reply (CFNRy) and Call Forwarding on Not Reachable (CFNRc) which are applicable to various basic services supported by TETRA SwMIs. Basic services are specified in ETS 300 392-2 [4].

SS-CFU, SS-CFB, SS-CFNRy and SS-CFNRc are supplementary services which apply during call establishment providing a forwarding of an incoming call to an other destination than the original destination defined by the calling user under different conditions (busy, no reply or not reachable) or under no condition (unconditional).

Supplementary services specifications are produced in three stages, according to the method described in ITU-T Recommendation I.210 [2]. The present document contains the stage 1 specifications of SS-CFU, SS-CFB, SS-CFNRy and SS-CFNRc. The stage 1 descriptions specify the supplementary services as seen by users of networks.

This ETS is applicable to circuit mode TETRA V+D tele-services and bearer services. This ETS is also applicable to TETRA Short Data Service (SDS).

Man Machine Interfaces and charging principles are outside the scope of this ETS.

Selective Call Forwarding is outside the scope of this ETS.

> NOTE 1: Selective Call Forwarding may be considered for further improvements of TETRA SS-CF at a later stage.

This second edition of this ETS was presented as a delta document to the first edition of ECMA-173 [1]. This second edition has been redrafted based on the latest published text of ECMA-173 [1] as a self contained document so as to be more readable. Additions to ECMA-173 [1] have been made to take into account particular TETRA specifics such as group calls and to include user requirements and situations not addressed in ECMA-173 [1].

> NOTE 2: Contrary to ECMA-173 [1], this ETS does not specify SS-CD (Call Deflection) which is not presently supported by TETRA.

> NOTE 3: Contrary to ECMA-173 [1], this ETS distinguishes between No Reply and Not Reachable because of the radio nature of the TETRA links.

This Standard specifies also the Forwarding Counter (FC), which is applicable to various basic services supported by TETRA Networks. Basic services are specified in ETS 300 392-2 [4].

FC counts the number of forwarding that a call has been forwarded and allows to limit the number of forwarding that a call request may encounter during call establishment, e.g. to protect the network against indefinite looping. There is no user involved in the provision or operation of forwarding counter.

2 Normative references

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

[1] ECMA-173 (1997): "Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Diversion Supplementary Services (CFSD)".

[2] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

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[3] ITU-T Recommendation Z.100 (1993): "CCITT Specification and description language (SDL)".

[4] ETS 300 392-2 (1995): "Terrestrial European Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[5] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this ETS, the following terms and definitions apply:

Additional network feature: additional network feature (ANF) is a capability, over and above that of a basic service, provided by a SwMI, but not directly to a SwMI user.

Authorized user: user who is responsible for the definition, activation and deactivation of the service. The authorized user may also interrogate the service.

Affected user: user who is subject to the operation.

Busy: TETRA destination is considered to be busy if either a "network determined user busy" or a "user determined user busy" condition exists.

Call, basic call: call or basic call is an instance of the use of a basic service.

Connected number: number of the user that answers (User C).

Forwarded-to number: forwarded-to number is the number to which a call is forwarded.

Forwarded-to user: forwarded-to user is the user to which a call is forwarded.

Forwarding: forwarding is the redirection of a call, on behalf of a called user and prior to connect, to a number different from the number of that called user.

Forwarding cause: forwarding cause contains the reason for the forwarding: CFU, CFB, CFNRy, CFNRc.

Forwarding counter: counter for the number of forwarding involved in a call or signalling connection during the establishment phase.

Forwarding number: forwarding number is the number of the served user.

Forwarding user: user for which the call forwarding is invoked; it may be the called user first and then any of the successive forwarded-to users (see also last forwarding user).

Forward switching: network routeing algorithm which performs the forwarding by joining together the first connection from User A's node to User B's node and a second, new connection from User B's node to User C's node.

Last forwarding user: last forwarding user is the served user from the point of view of the forwarded-to user for a particular stage of call forwarding. In the case of a call subject to a single stage of call forwarding, User B is the last forwarding user from the point of view of User C. In the case of a call subject to multiple stages of call forwarding, user B1 is the last forwarding user from the point of view of user B2, user B2 is the last forwarding user from the point of view of user B3, etc. The served user for the final stage of call forwarding is the last forwarding user from the point of view of User C.

Line Station (LS): physical grouping that contains all the fixed equipment that is used to obtain TETRA services through a line.

Mobile Station (MS): physical grouping that contains all of the mobile equipment that is used to obtain TETRA services. By definition, a mobile station contains at least one Mobile Radio Stack (MRS).

Original called number: original called number is the number of User B (in case of multiple call forwarding user B1).

Original called user: original called user is the first served user of a call which is subject to one or more stages of call forwarding, i.e. User B or B1.

Partial re-routeing: network routeing algorithm which performs the call forwarding by replacing a particular part of the connection from User A's node to User B's node by another connection from User A's node to User C's node.

Signalling connection: connection used to exchange information between peer supplementary service protocol control entities independently of a basic call.

Supplementary service: any service provided by a network in addition to its basic service or services (defined in CCITT Recommendation Q.9 [5]). A supplementary service modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a customer as a stand alone service. It must be offered together with or in association with a basic telecommunication service (extract from ITU-T Recommendation I.210 [2]).

Switching and Management Infrastructure (SwMI): all of the TETRA equipment for a Voice plus Data (V+D) network except for subscriber terminals. The SwMI enables subscriber terminals to communicate with each other via the SwMI.

SwMI number: SwMI number is a number belonging to a SwMI numbering plan.

Re-routeing: network routeing algorithm which performs the call forwarding by replacing the connection from User A's node to User B's node by another connection from User A's node to User C's node.

Served user: served user is the user of a particular SwMI number who is requesting that calls to his number be forwarded. This user may also be referred to as the forwarding user or the called user.

Tele-service: type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users according to agreed protocols.

Served user: user for whom the supplementary service is invoked.

User: entity using the services of a telecommunications network via an externally accessible service access point. Unless otherwise noted, the word user is to be understood as individual or group.

NOTE 1: A user may be a person or an application process.

User application: application process which acts as a user (see definition of user just above).

User A: user A is the calling user of a call which is subject to call forwarding.

User B: user B is the served (forwarding) user of a call which is subject to call forwarding.

User B1, user B2, user B3, etc.: these are the served (forwarding) users of a call which are subject to multiple stages of forwarding. B1 is the first served user, B2 is the second served user, B3 is the third served user, etc.

NOTE 2: B2 is also the forwarded-to user with respect to the first stage of call forwarding, B3 is also the forwarded-to user with respect to the second stage of call forwarding, etc.

User C: user C is the forwarded-to user with respect to the final stage of call forwarding.