

ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

STANDARD ECMA-161

PRIVATE TELECOMMUNICATION NETWORKS

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SIGNALLING AT THE S REFERENCE POINT

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GENERIC FEATURE KEY MANAGEMENT PROTOCOL
FOR THE CONTROL OF SUPPLEMENTARY SERVICES
(PTN SSIG-FK)

2nd Edition - June 1993

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

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Brief History

This Standard is one of a series of ECMA standards defining services and signalling protocols applicable to Private Telecommunication Networks (PTNs). The series uses the ISDN concepts as developed by the ITU-TS and is also within the framework of standards for open systems interconnection as defined by ISO. It has been produced under ETSI IMCC work item DE/ECMA-00027.

This particular Standard defines the feature key management stimulus protocol for use at the S reference point in support of basic circuit mode services.

The feature key management protocol for Private Telecommunication Networks (PTNs) selects options from and complements CCITT Recommendation Q.932. The differences between this Standard and the relevant section of Q.932 and the impact of these differences on terminal interchangeability can be found in annex E.

This Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC1, ITU-TS, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

Compared to the 1st Edition of Standard ECMA-161 (published by ECMA in December 1991), various changes have been made in order to achieve alignment with ETS 300 240 (which is based on the 1st Edition of ECMA-161 but modified during Public Enquiry and published by ETSI in June 1993).

Accepted as 2nd Edition of Standard ECMA-161 by the General Assembly of June 1993.

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1 Scope

This Standard defines the Feature Key Management signalling protocol for the purpose of supplementary service control at an interface at the S reference point between a Terminal Equipment (TE) and a Private Telecommunication Network (PTN).

The Feature Key Management protocol operates in conjunction with the signalling protocol specified in Standard ETS 300 192 for circuit-switched call control. It is based on the use of the two information elements, Feature activation and Feature indication. While the procedures associated with feature key invocation and indication are specified in this Standard, the allocation of actual codes used to designate individual supplementary services is outside the scope of this Standard.

This Standard is applicable to the user accesses of PTNs and to TEs which are intended for connection to PTNs.

2 Conformance

In order to conform to this Standard, a PTNX shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) proforma in sub-clause D.3 of annex D.

In order to conform to this Standard, a TE shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) proforma in sub-clause D.4 of annex D.

3 References

- | | |
|------------------|---|
| ECMA-105 | Private Telecommunication Networks (PTN) - Signalling at the S Reference Point - Data Link Layer Protocol (SSIG-L2) (1993) |
| ETS 300 102-1 | Integrated Services Digital Network (ISDN); User-network interface layer 3; Specification for basic call control; Application of CCITT Rec. Q.930/I.450 and Rec. Q.931/I.451 (1990) |
| ETS 300 189 | Private Telecommunication Network (PTN); Addressing (1992) |
| ETS 300 192 | Private Telecommunication Network (PTN); Signalling protocol at the S-reference point; Circuit mode basic services (1992) |
| CCITT Rec. I.112 | Vocabulary of terms for ISDNs (1988) |
| CCITT Rec. Q.932 | Generic procedures for the control of ISDN supplementary services (1988) |
| ENV 41007 | Definition of terms in private telecommunication networks (1989) |

4 Definitions

For the purpose of this Standard the following definitions apply.

4.1 Access

The definition of CCITT Rec. I.112 for "user-network access" shall apply, with "telecommunication network" being interpreted as "PTN".

4.2 Endpoint Identifier (EID)

Information used for terminal identification. The endpoint identifier parameters contain a USID and TID and additional information used to interpret them.

4.3 Feature

A supplementary service or a user-initiated PTN action which constitutes one specific part of a supplementary service.

4.4 Feature indication

An indication of the status of a feature from the PTN to the user.

4.5 Feature request

The initiation of a feature by the user.

4.6 **Private Telecommunication Network (PTN)**

The definition in ENV 41007 shall apply.

4.7 **Private Telecommunication Network Exchange (PTNX)**

The definition in ENV 41007 shall apply.

4.8 **Service profile**

The information that the PTN maintains for a given user to characterize the service offered by the PTN to that user. As an example, this may contain the association of feature identifiers with specific supplementary services. A service profile may for example be allocated to a PTN access interface or to a particular TE or a group of TEs.

4.9 **Service Profile Identifier (SPID)**

Identifies a specific service profile in the case that a TE asks for automatic assignment of a USID and TID by the PTN. The SPID allows the PTN to distinguish between different terminals that would otherwise be indistinguishable (e.g. same PTN number). The SPID value is provided to the user when installing a service profile and should uniquely identify that service profile.

4.10 **Supplementary Service**

A capability provided by a PTN to a PTN user over and above that of a basic call.

4.11 **Terminal Equipment (TE)**

The definition in ENV 41007 shall apply.

4.12 **Terminal Identifier (TID)**

Identifies a terminal uniquely within a given USID. If two TEs on an interface have the same service profile the two TEs will be assigned the same USID. However, two different TIDs are required to uniquely identify each of the two TEs.

4.13 **User**

The definition in ENV 41007 shall apply.

4.14 **User Service Identifier (USID)**

Uniquely identifies a service profile on a PTN access interface.

5 **Acronyms and abbreviations**

CEI	Connection Endpoint Identifier
CES	Connection Endpoint Suffix
EID	Endpoint Identifier
ISDN	Integrated Services Digital Network
PICS	Protocol Implementation Conformance Statement
PTN	Private Telecommunication Network
PTNX	Private Telecommunication Network Exchange
SAPI	Service Access Point Identifier
SPID	Service Profile Identifier
TE	Terminal Equipment
TEI	Terminal Endpoint Identifier
TID	Terminal Identifier
USID	User Service Identifier

6 **Feature Key Management Protocol**

NOTE 1

The text in this clause is based on section 5 of CCITT Rec. Q.932. Differences are indicated by emboldening.

The Feature Key management protocol is a mechanism allowing users to invoke supplementary services. As these are stimulus procedures, the protocol elements do not directly identify the service invoked. To determine the service

invoked requires knowledge of the user's service profile maintained in the **PTN**. No call state changes occur directly as a result of these procedures.

The Feature Key management protocol is based on two information elements: Feature activation and Feature indication. The Feature activation information element is the means by which a user requests a supplementary service. The Feature activation information element contains a feature identifier number which the **PTN** maps to the corresponding service as indicated by that user's service profile. The **TE** need not have any knowledge of what service is being indicated by the feature identifier number and the user may send a feature request at any time.

Feature indication is the means by which a response to a feature request is indicated by the **PTN**. The feature identifier number correlates the **PTN's** response with a user's request and/or an indicator associated with a **TE**. The Feature indication information element also contains a status indicator. The status indicator indicates the status of the requested service and may be used by the **TE** as appropriate with its man-machine interface.

6.1 Messages

6.1.1 Messages used in association with a Call Reference

The Feature activation and Feature indication information elements may be present in several of the messages defined in **ETS 300 192**. The Feature activation information element may appear in the following messages in the direction **TE** to **PTN**:

- a) SETUP
- b) INFORMATION
- c) ALERTING
- d) CONNECT
- e) DISCONNECT
- f) RELEASE
- g) RELEASE COMPLETE

The Feature activation information element may be repeated in a single message.

NOTE 2

"Activation" as part of the name "Feature activation" should not be confused with the term "activation" used elsewhere, e.g. in stage 1 descriptions. Depending on the context, "Feature activation" can mean invocation, activation, deactivation, interrogation etc. of a supplementary service.

The Feature indication information element may be sent in the direction **PTN** to **TE** in the following messages:

- a) SETUP
- b) SETUP ACKNOWLEDGE
- c) CONNECT
- d) CALL PROCEEDING
- e) ALERTING
- f) INFORMATION
- g) DISCONNECT
- h) RELEASE
- i) RELEASE COMPLETE
- j) CONNECT ACKNOWLEDGE

The Feature indication information element may be repeated in a single message.

6.1.2 Messages used in association with the Dummy Call Reference

One or more Feature activation information elements may appear in an INFORMATION message in the direction TE to PTN.

One or more Feature indication information elements may appear in an INFORMATION message in the direction PTN to TE.

6.1.3 Additional information elements

Several messages may contain further information elements, in addition to those specified in ETS 300 192, according to the following list:

Calling party number:	May be included in an INFORMATION message with the dummy call reference in the direction TE to PTN for multiple subscriber number arrangements (see ETS 300 189).
Cause:	May be included in an INFORMATION message in the direction PTN to TE (as response to a feature request).
Display:	May be included in every message in the direction PTN to TE.
Endpoint identifier:	May be included in INFORMATION and in SETUP messages (used for the optional terminal identification procedures described in annex A).
Information request:	May be included in an INFORMATION message in the direction PTN to TE (used for the optional information request procedures described in annex B).
Keypad facility:	May be included in INFORMATION and SETUP messages in the direction TE to PTN to provide additional information, e.g. in conjunction with the information request procedures according to annex B.
Signal:	May be included in the direction PTN to TE in the messages: ALERTING CONNECT CONNECT ACKNOWLEDGE DISCONNECT INFORMATION RELEASE RELEASE COMPLETE SETUP SETUP ACKNOWLEDGE
Service profile identification:	May be included in an INFORMATION message in the direction TE to PTN (used for the optional automatic assignment procedure described in sub-clause A.4 of annex A).
Switchhook:	May be included in the direction TE to PTN in the messages: CONNECT DISCONNECT INFORMATION RELEASE SETUP

The coding of these information elements is specified in clause 7.

6.2 Procedures

6.2.1 TE requests

6.2.1.1 Feature requests in association with a Call Reference

The TE may request a feature by including a Feature activation information element in **any of** the messages defined in 6.1. The TE **shall** indicate the desired feature by specifying the appropriate value in **the** feature identifier number **field**.

An INFORMATION message may be sent at any time after sending or receiving the first response to the SETUP message and before sending or receiving a RELEASE or RELEASE COMPLETE message.

6.2.1.2 Feature requests in association with the Dummy Call Reference

The Feature activation information element may be sent in an INFORMATION message using the dummy call reference in situations where it is inappropriate to use an existing call reference or to establish a new call reference for the purpose.