

ECMA

Standardizing Information and Communication Systems

Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol – Separated Bearer Control (SBC)

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Services Network (B-PISN) -
Inter-Exchange Signalling Protocol –
Separated Bearer Control (SBC)**

(B-QSIG-SBC)

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Brief History

This Standard is one of a series of ECMA Standards defining services and signalling protocols applicable to Broadband Private Integrated Services Networks (B-PISNs). The series uses B-ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC. It has been produced under ETSI work item DEN/ECMA-00160.

This particular Standard specifies the signalling protocol for use at the Q reference point for separated bearer control (B-QSIG-SBC).

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-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

This Standard has been adopted by the ECMA General Assembly of December 1999.

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1 Scope

This Standard defines the signalling protocol for the purpose of bearer control at the Q-reference point between Private Integrated Services Network Exchanges (PINXs) connected together within a Broadband Private Integrated Services Network (B-PISN) employing Asynchronous Transfer Mode (ATM). This Standard is part of the B-QSIG signalling system.

This Standard specifies the essential features, procedures, and messages required for establishing, maintaining and clearing of bearer connections to point-to-point multiconnection calls at the B-QSIG interface in a functionally separated call and bearer control environment. Bearers are controlled independently by means of a separated call control protocol. The separated call control protocol is assumed to be that specified in ECMA-294.

This Standard is applicable to PINXs that support separated call and bearer control protocol at the Q reference point. The Q reference point is defined in ISO/IEC 11579-1.

2 Conformance

In order to conform to this Standard, a PINX shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) proforma in annex A.

3 References (normative)

The following standards/recommendations contain provisions, which, through reference in this text, constitute provisions of this Standard. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ECMA-266	Broadband Private Integrated Services Network (B-PISN) – Inter-Exchange Signalling Protocol – Basic Call/Connection Control (International Standard ISO/IEC 13247)
ECMA-294	Broadband Integrated Services Digital Network (B-ISDN) and Broadband Private Integrated Services Network (B-PISN) - Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) - Call Control in a Separated Call and Bearer Control Environment - Part 1: Protocol Specification
ISO/IEC 11579-1	Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Part 1: Reference configuration for PISN Exchanges (PINX)
ITU-T Rec. I.112	Vocabulary of terms for ISDNs (1993)
ITU-T Rec. I.321	B-ISDN protocol reference model and its application (1991)
ITU-T Rec. I.371	Traffic control and congestion control in B-ISDN (1996)
ITU-T Rec. Q.9	Vocabulary of switching and signalling terms (Blue Book) (1988)

4 Definitions

For the purposes of this Standard the following definitions apply.

4.1 External definitions

This Standard uses the following terms defined in other documents:

- | | |
|-------------------------------------|--------------------|
| – ATM transfer capability (ATC) | (ITU-T Rec. I.371) |
| – bearer | (ECMA-294) |
| – bearer control | (ECMA-294) |
| – bearer control entity (BC entity) | (ECMA-294) |

- call (ECMA-294)
- call control (ECMA-294)
- call control entity (CC entity) (ECMA-294)
- call control signalling service user (ECMA-294)
- connection (ITU-T Rec. Q.9)
- Inter-PINX Link (IPL) (ECMA-266)
- private integrated services network (PISN) (ISO/IEC 11579-1)
- private integrated services network exchange (PINX) (ISO/IEC 11579-1)
- signalling (ITU-T Rec. I.112)
- user plane (ITU-T Rec. I.321)

4.2 Other definitions

4.2.1 Connection state

State for each connection which is known by the layer 3 bearer control entity.

4.2.2 Bearer identifier

The identifier used to identify a bearer instance within a call segment. The value of the bearer identifier is significant between two adjacent call control entities. This value is unique within a call segment.

4.2.3 Call segment

A part of a call located between two adjacent call control entities.

4.2.4 Call segment identifier

The identifier used to identify a multiconnection call instance to which a particular bearer establishment request relates between two call control entities at a given B-QSIG interface. The value of a call segment identifier is unique within two adjacent call control entities.

4.2.5 Preceding side

With respect to a given bearer, the side of a B-QSIG interface from which bearer establishment across the interface originates.

4.2.6 Succeeding side

With respect to a given bearer, the side (opposite to the preceding side) of a B-QSIG interface which receives the bearer establishment request across the interface.

4.2.7 Side

The protocol control entity in a PINX at one end of an IPL.

4.2.8 Signalling AAL (SAAL)

The AAL used for the bi-directional transfer of layer 3 signalling information.

4.2.9 Preceding PINX

PINX at the preceding side.

4.2.10 Succeeding PINX

PINX at the succeeding side.

4.2.11 Preceding PINX with call/bearer co-ordination

Preceding PINX providing co-ordination between the call control (CC) and the bearer control (BC) entity functionality. Both CC and BC entity functionality have to be supported on this PINX.

4.2.12 Preceding PINX without co-ordination function

Preceding PINX providing no co-ordination between the call control (CC) and the bearer control (BC) entity functions. Only BC entity functions have to be supported on this PINX.

4.2.13 Succeeding PINX without co-ordination function

Succeeding PINX providing no co-ordination between the call control (CC) and the bearer control (BC) entity functions. Only BC entity functions have to be supported on this PINX.

4.2.14 Succeeding PINX with co-ordination function

Succeeding PINX providing co-ordination between the call control (CC) and the bearer control (BC) entity functions. Both CC and BC entity functions have to be supported on this PINX.

5 List of acronyms

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
BC	Bearer Control
B-ISDN	Broadband Integrated Services Digital Network
B-PISN	Broadband Private Integrated Services Network
CC	Call Control
DSS2	Digital Subscriber Signalling System No 2
IPL	Inter- PINX Link
PINX	Private Integrated services Network eXchange
ROSE	Remote Operation Service Element
SAAL	Signalling ATM Adaptation Layer
SBC	Separated Bearer Control
SDL	Specification and Description Language

6 Description

6.1 Separation of call control and bearer control

The protocol specified in this Standard is applicable to an environment in which the control of a call is separate from the control of the bearer or bearers that exist within the context of that call.

In order for two users to communicate using a telecommunication service, an association, or call, is established between the two users. Within the context of the call, one or more bearers can be established for transporting user plane information between the users. However, bearers are not normally established until the call has been accepted by the called terminal, and therefore resources required by bearers are not occupied unnecessarily if the call cannot be established, e.g., if the called terminal is unable to accept the call because resources are not available. During the lifetime of the call, bearers can be added or cleared down as required. The call is terminated by one of the two users when there is no further need for communication. Termination of the call implies that all bearers (if any) are cleared down.

Although for some telecommunication services a single bearer is sufficient, other telecommunication services benefit from the use of multiple bearers; each tailored to suit the characteristics of the user plane information to be transported. This is particularly true for multi-media applications involving audio, video and data. The call provides a context in which the various bearers can exist and a means of binding the bearers together.

6.2 Relationship to call control architecture

Bearer control requires functionality, and hence a BC entity, at each terminal and at every network node through which the bearer is routed. This is in contrast to call control, which involves a CC entity only at the terminals and selected network nodes. Each bearer can be routed independently of other bearers and independently of the routing of call control signalling associations. However, each bearer is required to be routed through each network node at which there is a CC entity, and hence have a BC entity at each of these nodes, so that the CC entity can manage the bearer if required. This is illustrated in Figure 1 and a