

ECMA

Standardizing Information and Communication Systems

Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Signalling ATM Adaptation Layer

.....

ECMA

Standardizing Information and Communication Systems

Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Signalling ATM Adaptation Layer

(B-QSIG-SAAL)

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-00130.

This particular Standard specifies the Signalling ATM Adaptation Layer (SAAL) protocol for use at the Q reference point.

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 ECMA Standard is completely aligned with International Standard ISO/IEC 13246 to be published by ISO/IEC.

This ECMA Standard has been adopted by the General Assembly in September 1997.

Document ID: 123456789

Table of contents

1 Scope	1
2 Conformance	1
3 References (normative)	1
4 Definitions	1
5 List of acronyms	1
6 Description	2
6.1 Common Part - AAL Type 5	2
6.2 SSCOP	3
6.3 SSCF for Broadband Inter-PINX Signalling	3
7 Operational Requirements	3
7.1 B-QSIG SAAL Connections	3
7.2 Traffic Management Method for B-QSIG SAAL Connections	3
8 B-QSIG SAAL Specification	3
8.1 Basic Structure	3
8.2 AAL Type 5	3
8.3 SSCOP	3
8.4 SSCF for Broadband Inter-PINX Signalling	4
8.4.1 SAAL Services Provided by the SSCF for B-QSIG Signalling	4
8.4.2 Functions of the SSCF and Signalling Protocol Stack	4
8.4.3 Definition of the Boundary of SSCF to B-QSIG-Layer 3 Protocols	4
8.4.4 Definition of the Boundary of SSCF with SSCOP	4
8.4.5 State Transition Table of SSCF for Supporting B-QSIG Signalling	4
8.4.6 Boundary to Layer Management	4
8.4.7 Applicability of SSCOP Parameters and Timers to B-QSIG Signalling	4
8.4.8 PICS Proforma for SSCOP AND SSCOP-SSCF	5
8.4.9 SSCF for Semi-Permanent Connection (SPC) Control Signalling	5
Annex A - Protocol Implementation Conformance Statement (PICS) proforma for B-QSIG SAAL	7
Annex B - Relationship to corresponding ITU-T Recommendations for public B-ISDN UNIs	21
Annex C - Protocol data unit and related primitive sequences for establishment and release of B-QSIG SAAL connections	23

AVVA

1 Scope

This Standard specifies the signalling ATM adaptation layer (SAAL) protocol used at the interface between Broadband PINXs and between Broadband PISNs within the framework of the B-QSIG signalling system protocol family. The B-QSIG SAAL uses the functions provided by the ATM layer, and provides the services required by the B-QSIG Layer 3 signalling protocols.

2 Conformance

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

3 References (normative)

The following standards 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.

ISO/IEC 9646-1	Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts (1994)
ISO/IEC 9646-7	Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements (1995)
ITU-T Rec. I.321	B-ISDN protocol reference model and its application (1991)
ITU-T Rec. I.361	B-ISDN ATM layer specification (1995)
ITU-T Rec. I.362	B-ISDN ATM Adaptation Layer (AAL) functional description (1993)
ITU-T Rec. I.363.5	B-ISDN ATM Adaptation Layer (AAL) specification - Part 5: AAL Type 5 (1996)
ITU-T Rec. I.371	Traffic control and congestion control in B-ISDN (1996)
ITU-T Rec. Q.2100	B-ISDN Signalling ATM Adaptation Layer (SAAL) overview description (1994)
ITU-T Rec. Q.2110	B-ISDN ATM Adaptation Layer - Service Specific Connection Oriented Protocol (SSCOP) (1994)
ITU-T Rec. Q.2130	B-ISDN Signalling ATM Adaptation Layer - Service Specific Coordination Function for support of signalling at the User-Network Interface (SSCF at UNI) (1994)

4 Definitions

The definitions of ITU-T Recommendations I.363.5, Q.2110 and Q.2130 apply.

5 List of acronyms

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
B-ISDN	Broadband ISDN
B-PINX	B-PISN Exchange
B-PISN	Broadband Private Integrated Service Network
B-QSIG	Broadband QSIG
CRC	Cyclic Redundancy Check
IPL	Inter-PINX-Link
PICS	Protocol Implementation Conformance Statement

PINX	Private Integrated Services Network Exchange
SAAL	Signalling AAL
SDU	Service Data Unit
SPC	Semi-Permanent Connection
SSCF	Service Specific Convergence Functions
SSCOP	Service Specific Connection Oriented Protocol
UBR	Unspecified Bit Rate
UNI	User Network Interface

6 Description

The SAAL protocol for Broadband Inter-PINX signalling uses the services of the ATM layer and provides the services required by the B-QSIG Layer 3 signalling protocols. It is based on the generic framework outlined by Recommendations I.362 for the functional description of the AAL, and Q.2100 for the signalling AAL specification.

The B-QSIG SAAL allows a B-QSIG SAAL user (i.e. a layer 3 signalling protocol) to communicate with its peer entity. In particular, it provides for a reliable transfer of layer 3 signalling messages. The information transfer between the B-QSIG SAAL user and the B-QSIG SAAL uses primitives and is performed in Message Mode.

Two peer-to-peer operational procedures are specified: Unassured or Assured operation. The support of the Assured operation is mandatory. The support of Unassured operation is optional.

NOTE

The use of unassured operation is not required by the B-QSIG layer 3 signalling protocol.

The basic structure of the B-QSIG SAAL is contained in figure 1. For the B-QSIG SAAL, 3 sublayers are defined similar to those shown in figure 1 of Rec. Q.2100:

- SSCF for B-QSIG
- SSCOP
- Common Part - AAL Type 5.

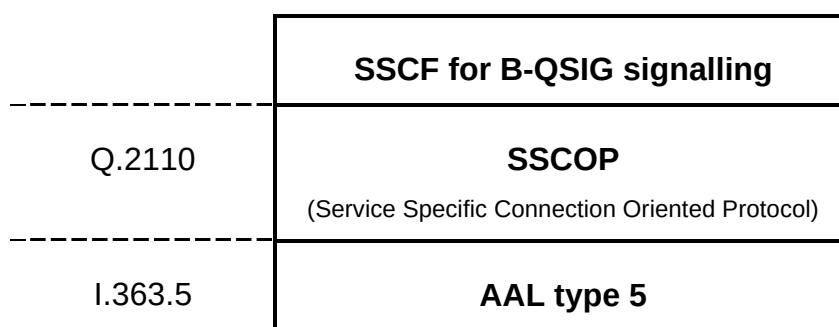


Figure 1 - B-QSIG SAAL Structure

6.1 Common Part - AAL Type 5

AAL Type 5 provides transparent transfer and CRC checking (32 Bits) for SSCOP SDUs, segmentation into ATM cells, and reassembly.

6.2 SSCOP

SSCOP provides the basic mechanisms for the establishment and release of connections and the reliable exchange of information between B-PINX peer entities.

6.3 SSCF for Broadband Inter-PINX Signalling

SSCF maps the particular requirements of the Broadband Inter-PINX layer 3 signalling protocols to the SSCOP services.

7 Operational Requirements

B-QSIG SAAL requires that the following configuration information is available at both sides of an IPL (the method for making this information available for both peer entities is outside the scope of this Standard):

- which virtual channel acts as the signalling channels for the IPL
- which traffic management method is applied on that virtual channel.

7.1 B-QSIG SAAL Connections

The B-QSIG SAAL operates in a connection-oriented mode. The B-QSIG SAAL connection(s) shall be established as part of the IPL establishment, and shall reside permanently (except for error cases).

NOTE

B-QSIG SAAL connections are established between two peer entities at the two ends of an IPL.

7.2 Traffic Management Method for B-QSIG SAAL Connections

For the operation of the B-QSIG SAAL protocol, the peer entities at two ends of an IPL shall be pre-configured with the traffic resources allocated to the B-QSIG SAAL connections. For each B-QSIG SAAL connection (or for a set of them together), the following are examples of parameters that can be pre-configured (see also ITU-T Rec. I.371):

- a peak cell rate indication (only), e.g. 167 cells/sec.
- peak cell rate, sustainable cell rate, and maximum burst size (together)
- an indication as "unspecified bit rate" (UBR).

The method of configuring the traffic resources allocated to the B-QSIG SAAL connection is outside the scope of this Standard. However, it is essential for the traffic management of B-QSIG SAAL connections that both peer entities at the IPL apply the same allocation of parameters.

8 B-QSIG SAAL Specification

8.1 Basic Structure

Clause 5 of ITU-T Rec. Q.2100 applies.

8.2 AAL Type 5

ITU-T Rec. I.363.5 applies.

8.3 SSCOP

ITU-T Rec. Q.2110 applies.

NOTE

The SSCOP can be combined with different Service Specific Coordination Functions (SSCFs) to offer different AAL services. As a result, the SSCOP specification defines mandatory functions for a general protocol. Some of these functions are not needed within B-QSIG SAAL. Therefore, it is possible for an implementation not to implement a certain SSCOP function and still meet the mandatory requirements of B-QSIG SAAL (e.g. the SSCOP local data retrieval function is not needed within B-QSIG SAAL), provided that the SSCOP implementation provides for the services used by the B-QSIG SAAL-SSCF.