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European Standard (Telecommunications series)

**Broadband Integrated Services Digital Network (B-ISDN);
Signalling ATM Adaptation Layer (SAAL);
Service Specific Connection Oriented Protocol (SSCOP);
Part 1: Protocol specification**

[ITU-T Recommendation Q.2110, modified]



Reference

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 1 of a multi-part EN covering the Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Connection Oriented Protocol (SSCOP), as identified below:

- Part 1:** "**Protocol specification [ITU-T Recommendation Q.2110, modified]**";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user".

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

Endorsement notice

The elements of ITU-T Recommendations Q.2110 [15] apply, with the following modifications:

1 Scope

The present document specifies the Service Specific Connection Oriented Protocol (SSCOP) for the pan-European Broadband Integrated Services Digital Network (B-ISDN) as provided by European public telecommunications operators.

The present document specifies the peer-to-peer protocol for the transfer of information between any pair of SSCOP entities, the interactions between the SSCOP and the ATM Adaptation Layer (AAL) common part, and the interactions between the SSCOP and the AAL management plane.

Further parts of the present document specify the method of testing required to identify conformance to this EN.

The present document is applicable as defined in the appropriate Service Specific Co-ordination Function (SSCF).

2 References

Insert the following references at the end of clause 2 of ITU-T Recommendation Q.2110 [15]:

The references of ITU-T Recommendation Q.2110 [15] apply, modified as shown below.

Reference in ITU-T Recommendation Q.2110	Modified reference
ITU-T Recommendation Q.2130 [9]	ITU-T Recommendation Q.2130 as modified by ETS 300 437-1 [11]
ITU-T Recommendation Q.2140 [10]	ITU-T Recommendation Q.2140 as modified by ETS 300 438-1 [12]
ITU-T Recommendation Q.2931 [5]	ITU-T Recommendation Q.2931 as modified by ETS 300 443-1 [13]

- [11] ETS 300 437-1: "Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Co-ordination Function (SSCF) for support of signalling at the User-Network Interface (UNI); Part 1: Specification of SSCF at UNI [ITU-T Recommendation Q.2130, modified]".
- [12] ETS 300 438-1: "Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Co-ordination Function (SSCF) for support of signalling at the Network Node Interface (NNI); Part 1: Specification of SSCF at NNI [ITU-T Recommendation Q.2140, modified]".
- [13] ETS 300 443-1: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 1: Protocol specification [ITU-T Recommendation Q.2931, modified]".
- [15] ITU-T Recommendation Q.2110 (1994): "B-ISDN ATM adaptation layer – Service specific connection oriented protocol (SSCOP)".
- [16] EN 300 436-2: "Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Connection Oriented Protocol (SSCOP); Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

NOTE: Not yet published.

3 Abbreviations

The terms and abbreviations defined in ITU-T Recommendation Q.2110 [15] apply.

4 Endorsement notice

The elements of clauses 3 onwards of ITU-T Recommendation Q.2110 [15] revisions to Q.2110 are indicated by underlining (additions) and strikeout (deletions) apply, with the following modifications:

Subclause 7.1, item 1):

After the last sentence of item 1) describing the STAT PDU add the following.

Optionally, a STAT PDU may also be transmitted any time the receiver needs to update the credit information. In this case N(PS) transmitted in the STAT PDU is set to VR(PS), the N(PS) of the last POLL PDU received. Detailed reception status information may or may not be included.

Subclause 7.4:

On page 17 of SSCOP, in the second paragraph of subclause 7.4, delete the two sentences.

~~When performing arithmetic comparisons of transmitter variables, VT(A) is assumed to be the base. When performing arithmetic comparisons of receiver variables, VR(R) is assumed to be the base.~~

Details of how to perform modulo comparisons can be found in Note 4, Figure 20 (sheet 2 of 51).

Subclause 7.4:

At the end of subclause 7.4, item d), add the following sentence.

As an implementation option, a BGN PDU in state 10 (IDLE) may always be accepted irrespective of the values of N(SQ) in the BGN PDU.

Thereafter add two additional receiver state variables as follows:

- e) VR(PS) - Receiver Poll Sequence Number (optional):
 - the poll sequence number of the last POLL PDU received. If a STAT PDU is to be transmitted which is not in response to a POLL PDU its N(PS) is set to VR(PS).
- f) poll_received - Receiver Poll Received Indication (optional):
 - indication, whether or not at least one POLL PDU has been received since connection establishment. It is set to NO on initialization. It is set to YES when a POLL is received.

Subclause 7.8.1

Insert after the third paragraph:

In order to prevent potential deadlock situations, the size of the operating window of the protocols at the transmitter should be upper bounded by the value

$10 \times \text{Timer_POLL} \times \mu_{###}$,

where $\mu_{###}$ is the maximum allowed mean signalling cellrate.

At the end of clause 7.8.1, add the following:

There are two options which can be applied to improve peer-to-peer flow control and performance:

- i) After emptying the retransmission buffer the transmitter may optionally send a POLL PDU independently of Timer_POLL and the value of MaxPD. In such a situation it is likely that one or more gaps will be closed at the receiver and immediately soliciting a credit update can be advised.
- ii) As credit is used to control resources at the receiver (e.g. the reception buffer) the times of granting (and withdrawing) of credit should be under the control of the receiver. Therefore the receiver may optionally transmit a STAT PDU when an immediate credit update seems opportune. This could, e.g., be the case after the recovery from local receiver congestion or after the closure of a gap in the reception buffer.

Figure 20 (sheet 2 of 51)

1. In the Notes delete "(on the use of queues)" in the first line.
2. In Note 4 insert the following after the third sentence:

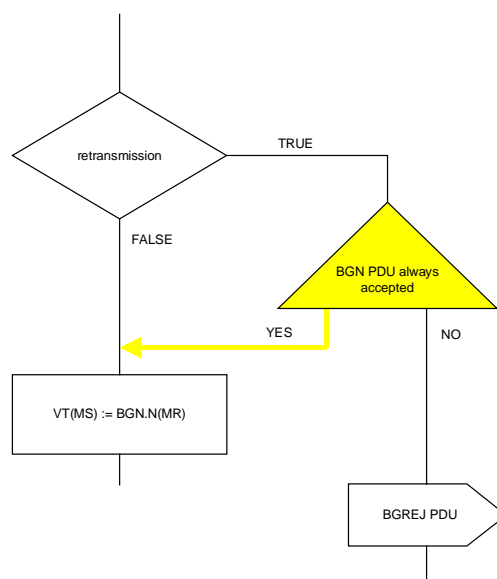
Modulo comparisons involving two terms (e.g. $x < y$) have to use a defined base value b to be well defined, i.e., so that the comparison can be made into one involving three terms (e.g. $b \leq x < y$).

3. At the end of Note 4 add the following:

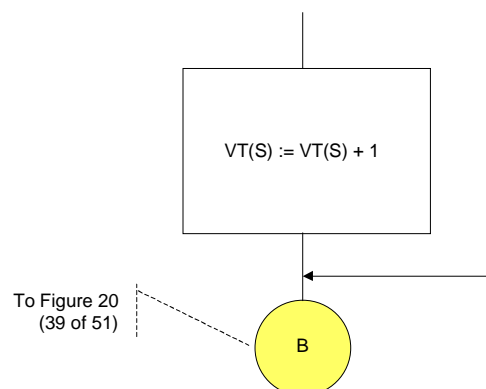
Modulo comparisons involving three terms (e.g. $x \leq y < z$) are already well defined and do not involve any extra base value.

Figure 20 (sheet 5 of 51)

In state 10 (IDLE) modify the actions after receipt of a "BGN PDU" as follows:

**Figure 20 (sheet 38 of 51)**

Of the three connectors labeled A, the middle one at the bottom of the page should be labeled B as follows:

**Figure 20 (sheet 40 of 51)**

Replace the lowerright corner by.

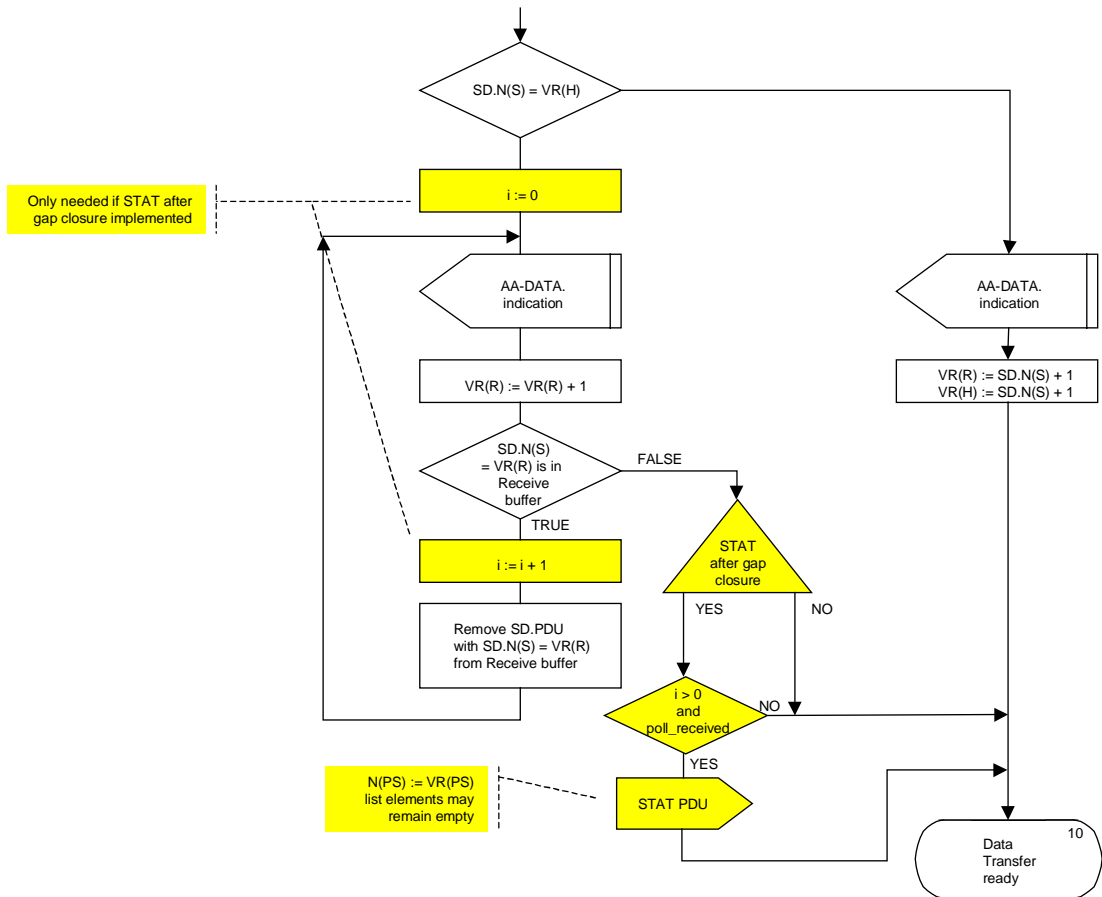


Figure 20 (sheet 41 of 51)

Add a new entry from the Data Transfer Ready State and modify the existing branch starting from the Data Transfer Ready State as follows:

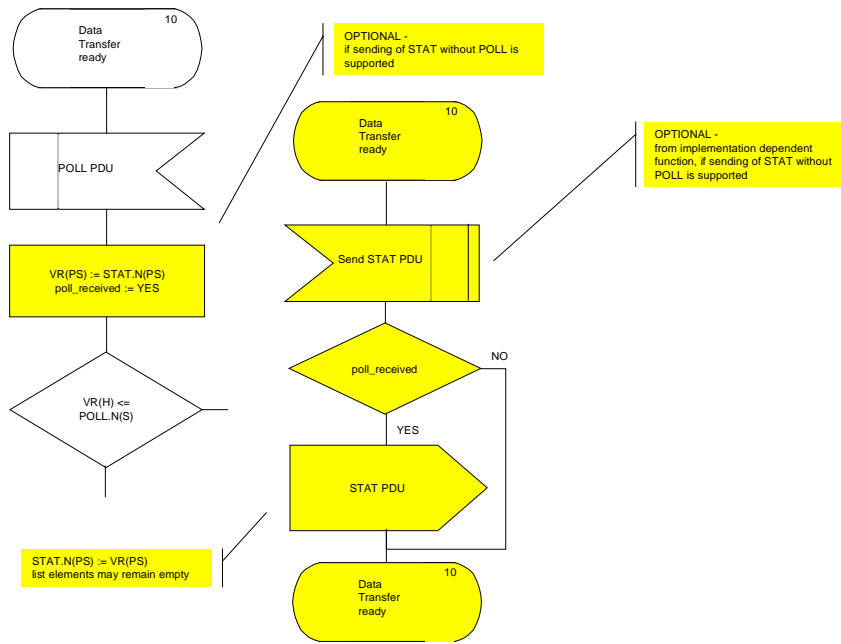
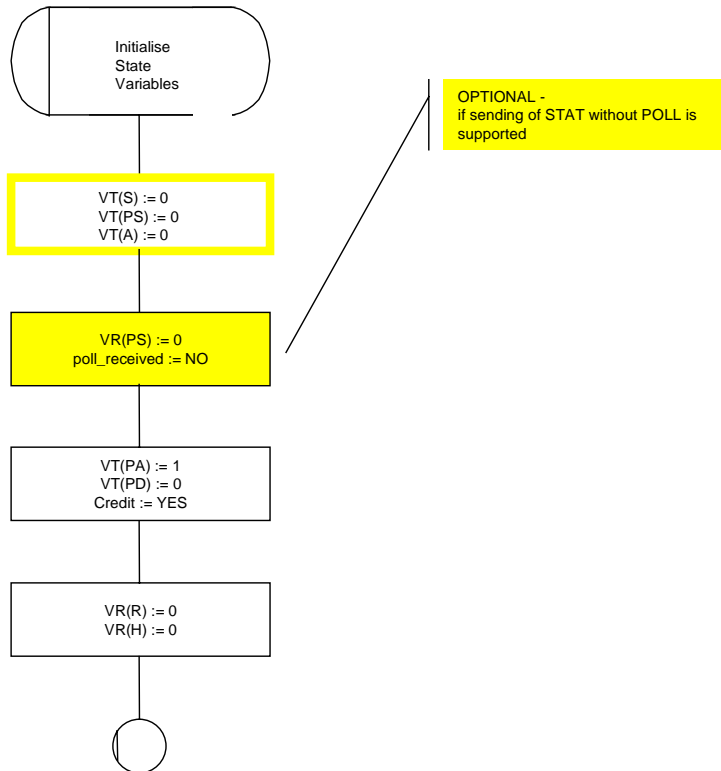


Figure 20 (sheet 49 of 51)

Modify the Initialize State Variables routine as follows:



Annex A

Annex A has the status of a normative annex.

Annex B

Delete annex B. It is substituted by ETS 300 436-2.

Appendix I

Appendix I has the status of an informative annex.

Appendix II

Appendix II has the status of an informative annex.

Appendix III

Appendix III has the status of an informative annex.

Appendix IV

Appendix IV has the status of an informative annex.

History

Document history		
Edition 1	November 1995	Publication as ETS 300 436-1
V1.2.1	December 1999	Public Enquiry PE 200014: 1999-12-08 to 2000-04-07