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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for access signalling

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Digital Subscriber Signalling System No. 2 – Connection modification: Modification procedures for sustainable cell rate parameters

ITU-T Recommendation Q.2963.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION Q.2963.2

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – CONNECTION MODIFICATION: MODIFICATION PROCEDURES FOR SUSTAINABLE CELL RATE PARAMETERS

Summary

This Recommendation extends the Peak Cell Rate (PCR) parameters modification capability specified in Recommendation Q.2963.1 to include the modification of the Sustainable Cell Rate (SCR) and the Maximum Burst Size (MBS) parameters.

Source

ITU-T Recommendation Q.2963.2 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 12th of September 1997.

FOREWORD

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The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – CONNECTION MODIFICATION: MODIFICATION PROCEDURES FOR SUSTAINABLE CELL RATE PARAMETERS

(Geneva, 1997)

1 Scope

This Recommendation specifies the signalling protocol for ATM traffic descriptor modification for the Broadband Integrated Services Digital Network (B-ISDN) at the T_B reference point or coincident S_B and T_B reference point (as defined in Recommendation I.413 [1]) by means of the Digital Subscriber Signalling System No. 2 (DSS 2). This Recommendation extends the Peak Cell Rate (PCR) parameters modification capability specified in Recommendation Q.2963.1 to include the modification of the Sustainable Cell Rate (SCR) and the Maximum Burst Size (MBS) parameters.

In addition, this Recommendation specifies the protocol requirements at the T_B reference point where the service is provided to the user via a private B-ISDN.

The capability described in this Recommendation enables the connection owner to modify the ATM traffic descriptor for call/connections that have already been established.

ATM traffic descriptor modification is applicable to all connection-oriented telecommunication services that are based on single point-to-point calls/connections. The ATM traffic descriptor modification for point-to-multipoint calls/connections is outside the scope of this Recommendation.

This Recommendation is applicable to equipment, supporting ATM traffic descriptor modification, to be attached at either side of a T_B reference point or coincident S_B and T_B reference point when used as an access to the public B-ISDN.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation I.413 (1993), *B-ISDN user-network interface.*

[2] ITU-T Recommendation Q.2931 (1995), *Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control.*

[3] ITU-T Recommendation Q.2961.1 (1995), *Digital Subscriber Signalling System No. 2 – Additional traffic parameters for the tagging option and the sustainable cell rate parameter set.*

[4] ITU-T Recommendation Q.2963.1 (1996), *Digital Subscriber Signalling System No. 2 – Connection modification: Peak cell rate modification by the connection owner.*

3 Definitions

For the purpose of this Recommendation the definitions in clause 3/Q.2963.1 apply.

4 Abbreviations

This Recommendation uses the following abbreviations:

ATM Asynchronous Transfer Mode

CLP Cell Loss Priority

B-ISDN Broadband Integrated Services Digital Network

MBS Maximum Burst Size

PCR Peak Cell Rate

SCR Sustainable Cell Rate

UNI User-Network Interface

VC Virtual Channel

5 Description

The basic capabilities supported by this Recommendation are applicable for:

1) Modification of any or all of the following parameters which were specified in the ATM traffic descriptor at call establishment: forward PCR (CLP = 0 + 1), forward PCR (CLP = 0), forward SCR (CLP = 0 + 1), forward SCR (CLP = 0), forward MBS (CLP = 0 + 1), forward MBS (CLP = 0), backward PCR (CLP = 0 + 1), backward PCR (CLP = 0), backward SCR (CLP = 0 + 1), backward SCR (CLP = 0), backward MBS (CLP = 0 + 1), backward MBS (CLP = 0). The above parameters can be requested to be incremented or decremented independently.

2) Modifying a point-to-point connection (type 1).

3) Modifications may be initiated only by the connection owner for a call/connection that is already established (i.e. in the active state). Call/connections that are in the process of being established or cleared cannot be modified.

The following subclauses describe each capability in more detail.

5.1 Modifiable connections

Modification can only be requested by the connection owner for connections which are already established. Therefore, connections which are being established, modified or cleared cannot be modified.

In the case where clearing is requested of a connection which is being modified, the clearing operation has priority. This results in termination of the modification procedure, i.e. no more messages related to the modification procedure are sent across the user-network interface.

An ATM traffic descriptor parameter can be modified only if the parameter was specified at call establishment, e.g. if the forward SCR (CLP = 0) parameter was not specified at connection establishment, then it cannot be modified by this procedure. The modification request may be for all or a subset of the parameters specified during call establishment.

During the modification of the ATM traffic descriptor, the following rules apply:

- The modification initiating user is prepared to receive based on an ATM traffic descriptor for which the receive traffic parameters are the greater of the existing receive traffic parameters and of the requested modified receive traffic parameters.
- The modification initiating user transmits based on an ATM traffic descriptor for which the transmit traffic parameters are the lesser of the existing transmit traffic parameters and of the requested modified transmit traffic parameters.

5.2 Modification of a point-to-point connection

This Recommendation only supports the modification of the attributes of a point-to-point connection (type 1).

During the operation of modifying the ATM traffic parameters of a connection, the service application supported by the affected connection remains active.

When the OAM traffic descriptor information element was included at call/connection establishment, the allocation of bandwidth for OAM flows will be based on the ATM traffic descriptor agreed. Since the OAM F5 flow allocation is bidirectional (see Note to 4.5/Q.2931), the available user cell rate in one direction can be affected by modification of bandwidth in the other direction.

6 Operational requirements

The provision of the connection modification capability is a service provider option.

6.1 Provision and withdrawal

It is a user and a network option to provide the procedures described in this Recommendation. If implemented, the procedures of this Recommendation may be provided as a subscription option to the served user on the origination side.

6.2 Requirements on the originating network side

See 6.1 above.

6.3 Requirements on the destination network side

See 6.1 above.

7 Primitive and state definitions

7.1 Primitive definitions

Clause 8/Q.2931 shall apply. No additional primitives between DSS 2 layer 3 and the signalling ATM adaptation layer are defined for the purpose of this Recommendation.

7.2 State definitions

Subclause 7.2/Q.2963.1 shall apply.

8 Coding requirements

8.1 Messages

Subclause 8.1/Q.2963.1 applies with the following modifications:

- The length of the ATM traffic descriptor information element in Table 8-1/Q.2963.1 for the MODIFY REQUEST message is in the range 8-28.
- Note 2 of Table 8-1/Q.2963.1 is replaced by the following:

  NOTE 2 – In this message octet groups 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 are optional but at least one of these octet groups shall be present.

8.2 Coding of the specific message types and specific information elements

Subclause 8.2/Q.2963.1 applies.

9 Signalling procedures at the coincident S_B and T_B reference point

The procedures specified in clause 9/Q.2963.1 shall apply with the following modifications:

1) In 9.1.1/Q.2963.1, replace the two bullet items following the first dashed item with the following text:

   - reserve corresponding resources if the requested modification requires additional reservation;
   - when the decrease of any ATM traffic parameter is requested, reduce the transmitting ATM traffic parameters corresponding to those parameters for which a decrease is requested.

2) In 9.1.1/Q.2963.1, replace the bullet item following the second dashed item with the following text:

   - reserve corresponding resources if the requested modification requires additional reservation.

3) In 9.2.1/Q.2963.1, replace the first two bullet items following the first dashed item with the following text:

   - reserve corresponding resources if the requested modification requires additional reservation;
   - change the forward UPC if decrease of any forward ATM traffic parameters is requested.

4) In 9.2.2/Q.2963.1, replace the second bullet item following the first paragraph with the following text:

   - change the forward UPC if the increase of any forward ATM traffic parameter is requested.

5) In 9.2.2/Q.2963.1, replace the first bullet item following the second dashed item with the following text:

   - reduce the backward ATM traffic parameters (if any) for which a decrease is requested.

10 Procedures at the T_B reference point for interworking with private B-ISDNs

The procedures specified in clause 9 shall apply.

11 Interworking with other networks

No interworking with other networks has been identified.

12 Interactions with supplementary services

Clause 12/Q.2963.1 shall apply.

13 Parameter values

The parameter values specified in clause 13/Q.2963.1 shall apply.

14 Dynamic description SDLs

The SDLs specified in clause 14/Q.2963.1 shall apply.

Appendix I

Example configuration of user and network behaviour during modification procedures

The examples shown in Appendix I/Q.2963.1 apply with the following modifications. In the legends to both Figures I.1/Q.2963.1 and I.2/Q.2963.1 replace:

- "Increase" by "Increase of any parameter";
- "Decrease" by "Decrease of any parameter".

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