



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

I.378

(12/2002)

SERIES I: INTEGRATED SERVICES DIGITAL
NETWORK

Overall network aspects and functions – General network
requirements and functions

Traffic control and congestion control at the ATM Adaptation Layer type 2

ITU-T Recommendation I.378

ITU-T I-SERIES RECOMMENDATIONS
INTEGRATED SERVICES DIGITAL NETWORK

GENERAL STRUCTURE	
Terminology	I.110–I.119
Description of ISDNs	I.120–I.129
General modelling methods	I.130–I.139
Telecommunication network and service attributes	I.140–I.149
General description of asynchronous transfer mode	I.150–I.199
SERVICE CAPABILITIES	
Scope	I.200–I.209
General aspects of services in ISDN	I.210–I.219
Common aspects of services in the ISDN	I.220–I.229
Bearer services supported by an ISDN	I.230–I.239
Teleservices supported by an ISDN	I.240–I.249
Supplementary services in ISDN	I.250–I.299
OVERALL NETWORK ASPECTS AND FUNCTIONS	
Network functional principles	I.310–I.319
Reference models	I.320–I.329
Numbering, addressing and routing	I.330–I.339
Connection types	I.340–I.349
Performance objectives	I.350–I.359
Protocol layer requirements	I.360–I.369
General network requirements and functions	I.370–I.399
ISDN USER-NETWORK INTERFACES	
Application of I-series Recommendations to ISDN user-network interfaces	I.420–I.429
Layer 1 Recommendations	I.430–I.439
Layer 2 Recommendations	I.440–I.449
Layer 3 Recommendations	I.450–I.459
Multiplexing, rate adaption and support of existing interfaces	I.460–I.469
Aspects of ISDN affecting terminal requirements	I.470–I.499
INTERNETWORK INTERFACES	I.500–I.599
MAINTENANCE PRINCIPLES	I.600–I.699
B-ISDN EQUIPMENT ASPECTS	
ATM equipment	I.730–I.739
Transport functions	I.740–I.749
Management of ATM equipment	I.750–I.759
Multiplexing aspects	I.760–I.769

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation I.378

Traffic control and congestion control at the ATM Adaptation Layer type 2

Summary

This Recommendation provides a general description as well as objectives and procedures for AAL type 2 traffic control and congestion control. It introduces the concept of AAL type 2 transfer capability. For each AAL type 2 transfer capability, it specifies AAL type 2 traffic parameters, an AAL type 2 conformance definition and defines AAL type 2 QoS commitments. Additionally, it describes the concepts of the AAL type 2 traffic contract.

Source

ITU-T Recommendation I.378 was prepared by ITU-T Study Group 13 (2001-2004) and approved under the WTSA Resolution 1 procedure on 14 December 2002.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 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.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. 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, 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.

© ITU 2003

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

Page

1	Scope	1
2	References.....	1
2.1	Normative references.....	1
2.2	Informative references.....	1
3	Abbreviations.....	2
4	Introduction	2
5	AAL type 2 traffic parameters and descriptors.....	3
5.1	Definitions	3
5.2	Requirements on AAL type 2 traffic parameters and AAL type 2 traffic descriptors.....	3
5.3	AAL type 2 traffic parameter specifications	3
5.3.1	AAL type 2 reference configuration.....	3
5.3.2	AAL type 2 traffic parameter description	5
6	AAL type 2 transfer capabilities.....	6
6.1	Fixed Bandwidth (FBW) AAL type 2 transfer capability	6
6.1.1	Description	6
6.1.2	Service model	6
6.1.3	Traffic descriptor	6
6.1.4	Conformance definition.....	7
6.1.5	QoS commitments	7
6.2	Variable Bandwidth Stringent (VBW-S) AAL type 2 transfer capability	7
6.2.1	Description	7
6.2.2	Service model	7
6.2.3	VBW-S traffic descriptor	7
6.2.4	VBW-S conformance definition.....	7
6.2.5	QoS commitments	8
6.3	Variable Bandwidth Tolerant (VBW-T) AAL type 2 transfer capability	8
6.3.1	Description	8
6.3.2	Service model	8
6.3.3	VBW-T traffic descriptor	8
6.3.4	VBW-T conformance definition.....	8
6.3.5	QoS commitments	9
7	Functions for AAL type 2 traffic control and AAL type 2 congestion control	9
7.1	Introduction to AAL type 2 traffic control and AAL type 2 congestion control functions.....	9
7.1.1	AAL type 2 traffic control functions	9

	Page
7.1.2 AAL type 2 congestion control functions	9
7.2 AAL type 2 traffic control functions	9
7.2.1 AAL type 2 path resource management	9
7.2.2 AAL type 2 connection admission control	9
7.2.3 CPS packet discard control	9
7.2.4 AAL type 2 traffic shaping	10
7.2.5 AAL type 2 packet scheduling	10
7.3 AAL type 2 congestion control functions	10
7.3.1 CPS packet discard control	10
7.3.2 AAL type 2 scheduling control	10
8 Methods and tools for AAL type 2 path resource management	10
Appendix I – Mapping of AAL type 2 traffic parameters	10
Appendix II – Guidelines for choosing AAL 2 parameter values for connections with control frames	11
Appendix III – Information on the source traffic type and source traffic type set	12

ITU-T Recommendation I.378

Traffic control and congestion control at the ATM Adaptation Layer type 2

1 Scope

This Recommendation describes traffic control and congestion control procedures at the AAL type 2 level as defined in [3]. Such control procedures are necessary in order to support AAL type 2 connections with QoS.

AAL type 2 traffic control refers to all network actions aiming to meet the negotiated performance objectives at the AAL type 2 level and to allow the avoidance of congested conditions.

AAL type 2 congestion control refers to all network actions to minimize the intensity, spread and duration of congestion.

This Recommendation provides a general description as well as objectives and procedures for AAL type 2 traffic control and congestion control. It introduces the concept of AAL type 2 transfer capability. For each AAL type 2 transfer capability, it specifies AAL type 2 traffic parameters, an AAL type 2 conformance definition and defines AAL type 2 QoS commitments. Additionally, it describes the concepts of the AAL type 2 traffic contract.

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; 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. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

2.1 Normative references

- [1] ITU-T Recommendation I.371 (2000), *Traffic control and congestion control in B-ISDN*.
- [2] ITU-T Recommendation I.356 (2000), *B-ISDN ATM layer cell transfer performance*.
- [3] ITU-T Recommendation I.363.2 (2000), *B-ISDN ATM Adaptation Layer: Type 2 AAL specification*.
- [4] ITU-T Recommendation Q.2630.1 (1999), *AAL type 2 signalling protocol – Capability Set 1*.
- [5] ITU-T Recommendation Q.2630.2 (2000), *AAL type 2 signalling protocol – Capability Set 2*.
- [6] ITU-T Recommendation Y.1221 (2002), *Traffic control and congestion control in IP-based networks*.
- [7] ITU-T Recommendation I.366.2 (2000), *AAL type 2 service specific convergence sublayer for narrow-band services*.

2.2 Informative references

- [8] 3GPP TS 25.415 V3.5.0 (2000-12), *UTRAN Iu Interface User Plane Protocols*.