



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

D.224

(12/99)

SERIES D: GENERAL TARIFF PRINCIPLES

General tariff principles – Charging and accounting principles for international telecommunication services provided over the ISDN

Charging and accounting principles for ATM/B-ISDN

ITU-T Recommendation D.224

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION D.224

CHARGING AND ACCOUNTING PRINCIPLES FOR ATM/B-ISDN

Summary

This Recommendation sets out the general principles and conditions applicable by Administrations for the capability to transport ATM cells over ATM connections between standardized interfaces and for services using such connections.

Specific charging and accounting principles for point-to-multipoint ATM connections are not currently addressed in this version of this Recommendation.

Source

ITU-T Recommendation D.224 was prepared by ITU-T Study Group 3 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 17 December 1999.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The 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 Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

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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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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Recommendation D.224**CHARGING AND ACCOUNTING PRINCIPLES FOR ATM/B-ISDN***(Geneva, 1999)***1 Preamble**

This Recommendation covers charging and accounting principles applicable to B-ISDN/ATM services provided at the ATM layer.

2 Scope

This Recommendation sets out the general principles and conditions applicable by Administrations for the capability to transport ATM cells over ATM connections between standardized interfaces and for services using such connections (Recommendations F.811, F.813).

An ATM connection is characterized through a traffic contract encompassing the Quality of Service (QoS) class as specified in Recommendation I.356, ATM Transfer Capability (ATC) as specified in Recommendations I.371 and I.371.1, and applicable traffic parameters.

Specific charging and accounting principles for point-to-multipoint ATM connections are not currently addressed in this version of this Recommendation.

3 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.

- ITU-T Recommendation F.811 (1996), *Broadband connection-oriented bearer service*.
- ITU-T Recommendation F.813 (1995), *Virtual path service for reserved and permanent communications*.
- ITU-T Recommendation I.356 (1996), *B-ISDN ATM layer cell transfer performance*.
- ITU-T Recommendation I.371 (1996), *Traffic control and congestion control in B-ISDN*.
- ITU-T Recommendation I.371.1 (1997), *Traffic control and congestion control in B-ISDN: conformance definitions for ABT and ABR*.
- ITU-T Recommendation I.630 (1999), *ATM Protection Switching*.

4 Terms and definitions

4.1 Definitions

This Recommendation defines the following terms:

4.1.1 Chargeable Cell Rate (CCR): The Chargeable Cell Rate of a connection is a single cell rate parameter used to determine the reservation based charge element for that connection. The CCR is a computed simplification of the traffic contract values of the connection to a single cell rate value. The concept of CCR applies only to charging and accounting. It is used only in the reservation based charge element. The CCR is computed as a function of the connection parameters, such as QoS class, ATC, source traffic descriptor and associated tolerances. The use and the calculation function for the CCR are Administration-specific.

4.1.2 Connection establishment: *Connection establishment* indicates the moment the connection has been set up and has become available to the user to transport ATM cells. For connections using signalling, this corresponds to the entry into the 'active' state.

4.1.3 Connection release: *Connection release* indicates the moment the connection has become unavailable to the user to transport ATM cells. For connections using signalling this corresponds to the departure from the 'active' state.

4.1.4 Connection's active phase: The *connection's active phase* indicates the entire period between connection establishment and connection release.

4.1.5 Distance: Distance in the context of this Recommendation is to be related to the facilities made available to realise the connection between the applicable interfaces. It is Administration-specific whether and how distance influences the charging parameters. If distance-dependent differentiation is used, an Administration may choose to define distance regions or distance zones to simplify its implementation.

4.2 Abbreviations and acronyms

This Recommendation uses the following abbreviations:

ABR	Available Bit Rate (Rec. I.371)
ABT/DT	ATM Block Transfer/Delayed Transfer (Rec. I.371)
ABT/IT	ATM Block Transfer/Immediate Transfer (Rec. I.371)
ATC	ATM Transfer Capability (Rec. I.371)
ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
CAC	Connection Admission Control (Rec. I.371)
CCR	Chargeable Cell Rate
CDR	Connection Detail Record
CDV	Cell Delay Variation (Rec. I.356)
CLP	Cell Loss Priority (Recs. I.361, I.356, I.371)
CP_M(.)	Charge Parameter – connection Modification
CP_R(.)	Charge Parameter – Reservation
CP_S(.)	Charge Parameter – connection Set-up
CP_U(.)	Charge Parameter – Usage
DBR	Deterministic Bit Rate (Rec. I.371)

GFR	Guaranteed Frame Rate (Rec. I.371)
GIT	Generic Identifier Transport (Rec. Q.2726.3)
ICU	Imaginary Currency Unit
INI	Inter-Network Interface
MBS	Maximum Burst Size (Rec. I.371)
MCR	Minimum Cell Rate (Rec. I.371)
NPC	Network Parameter Control (Rec. I.371)
OAM	Operation And Maintenance (Rec. I.610)
PCR	Peak Cell Rate (Rec. I.371)
PVC	Permanent Virtual Connection
QoS	Quality of Service (Rec. I.356)
RM	Resource Management (Recs. I.610, I.371)
SBR	Statistical Bit Rate (Rec. I.371)
SCR	Sustainable Cell Rate (Rec. I.371)
SVC	Switched Virtual Connection
UNI	User Network Interface (Recs. I.112, I.413)
UPC	Usage Parameter Control (Rec. I.371)
VCC	Virtual Channel Connection (Recs. I.311, I.150)
VPC	Virtual Path Connection (Recs. I.311, I.150)

5 Units, elements, parameters and concepts for charging network utilization

This clause introduces the charging units, the charge elements and their parameters and the concepts recommended to be used to charge for network utilization. The network utilization charges cover the costs related to the utilization of the network resources.

Charge elements and their parameters are introduced below. The use (or not) of such elements and parameters and their values are administration-specific in case of charging, and subject to agreement between the Administrations involved in case of accounting.

5.1 Charging units

The following charging units are applicable to ATM-level charging.

- In case duration is used as element in the charge, the unit is second (s).
- In case a cell rate is used as element in the charge, the unit is cell per second (cell/s).
- In case usage is used as element in the charge, the unit is cell (cell).

NOTE – To ease notation, an Administration may choose to use kilocell or megacell as the unit in charging or accounting, instead of a single cell. Such a choice does not affect the essence of the charging or accounting.

5.2 Charge elements

For charging individual connections the following elements may be used:

- connection set-up charge element (see 5.2.1);
- connection set-up attempt (failed) charge element (see 5.2.2);
- connection modification charge element (see 5.2.3);