

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

D.271

(10/2016)

SERIES D: TARIFF AND ACCOUNTING PRINCIPLES AND INTERNATIONAL TELECOMMUNICATION/ICT ECONOMIC AND POLICY ISSUES

General tariff principles – Charging and accounting
principles for next generation networks (NGN)

Charging and accounting principles for NGN

Recommendation ITU-T D.271

ITU-T

ITU-T D-SERIES RECOMMENDATIONS

TARIFF AND ACCOUNTING PRINCIPLES AND INTERNATIONAL TELECOMMUNICATION/ICT ECONOMIC AND POLICY ISSUES

TERMS AND DEFINITIONS	D.0
GENERAL TARIFF PRINCIPLES	
Private leased telecommunication facilities	D.1–D.9
Tariff principles applying to data communication services over dedicated public data networks	D.10–D.39
Charging and accounting in the international public telegram service	D.40–D.44
Charging and accounting in the international telex message service	D.45–D.49
Principles applicable to GII-Internet	D.50–D.59
Charging and accounting in the international telex service	D.60–D.69
Charging and accounting in the international facsimile service	D.70–D.75
Charging and accounting in the international videotex service	D.76–D.79
Charging and accounting in the international phototelegraph service	D.80–D.89
Charging and accounting in the mobile services	D.90–D.99
Charging and accounting in the international telephone service	D.100–D.159
Drawing up and exchange of international telephone and telex accounts	D.160–D.179
International sound- and television-programme transmissions	D.180–D.184
Charging and accounting for international satellite services	D.185–D.189
Transmission of monthly international accounting information	D.190–D.191
Service and privilege telecommunications	D.192–D.195
Settlement of international telecommunication balances of accounts	D.196–D.209
Charging and accounting principles for international telecommunication services provided over the ISDN	D.210–D.260
Economic and policy factors relevant to the efficient provision of international telecommunication services	D.261–D.269
Charging and accounting principles for next generation networks (NGN)	D.270–D.279
Charging and accounting principles for universal personal telecommunication	D.280–D.284
Charging and accounting principles for intelligent network supported services	D.285–D.299
RECOMMENDATIONS FOR REGIONAL APPLICATION	
Recommendations applicable in Europe and the Mediterranean Basin	D.300–D.399
Recommendations applicable in Latin America	D.400–D.499
Recommendations applicable in Asia and Oceania	D.500–D.599
Recommendations applicable to the African Region	D.600–D.699

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

112

Recommendation ITU-T D.271

Charging and accounting principles for NGN

Summary

Recommendation ITU-T D.271 sets out the general principles and conditions applicable by administrations for the capability to transport IP packets over IP-based networks between standards-based interfaces and the services that they support.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T D.271	2008-04-04	3	11.1002/1000/9318
2.0	ITU-T D.271	2016-10-25	3	11.1002/1000/12830

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). 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.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2017

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

Table of Contents

		Page
1	Preamble	1
2	Scope.....	1
3	References.....	1
4	Terms and definitions	1
4.1	Definitions	1
4.2	Abbreviations and acronyms	2
5	Units, elements, parameters and concepts for charging network utilization	2
5.1	Charging units	3
5.2	Charge elements	3
5.3	Charging periods	4
5.4	Viable combinations of charge elements.....	8
6	Charging end-customers	8
6.1	Network access component	8
6.2	Network utilization component	9
7	Accounting between administrations.....	9
7.1	Network access component	9
7.2	Network utilization component	9
8	Charging parameters	14
8.1	Charging parameters for DiffServ	14
8.2	Charging parameters for SIP-initiated services	14
8.3	Charging parameter for MPLS	15
8.4	Charging parameter for CDN	15
	Bibliography.....	16

Recommendation ITU-T D.271

Charging and accounting principles for NGN

1 Preamble

This Recommendation covers charging and accounting principles applicable to NGN services.

2 Scope

This Recommendation sets out the general principles and conditions applicable by administrations for the capability to transport IP packets over IP-based networks between standards-based interfaces and the services that they support.

Specific charging and accounting principles for broadcasting issues are not currently addressed in this version of this Recommendation.

3 References

None.

4 Terms and definitions

4.1 Definitions

This Recommendation defines the following terms:

4.1.1 call: An association between endpoints that support an instance of a service.

4.1.2 chargeable packet rate (CPR): The chargeable packet rate of a session is a single packet rate parameter used to determine the reservation-based charge element for that session. The CPR is a computed simplification of the traffic contract values of the session to a single packet rate value. The concept of CPR applies only to charging and accounting. It is used only in the reservation-based charge element. The CPR is computed as a function of the session parameters, such as QoS class, source traffic descriptor and associated tolerances. The use and the calculation function for the CPR are administration-specific.

4.1.3 distance: Distance in the context of this Recommendation is related to the facilities made available to the session 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.

4.1.4 flow: A flow is defined as a set of IP packets passing an observation point in the network during a certain time interval [b-ITU-T Y.2233].

4.1.5 session: A temporary telecommunications relationship among a group of objects in the service stratum that are assigned to collectively fulfil a task for a period of time [b-ITU-T Y.2091].

4.1.6 session active phase: The session's active phase indicates the entire period between session establishment and session release.

4.1.7 session establishment: Session establishment indicates the moment the session has been set up and has become available to the user to transport packets. For sessions using signalling (or not), this corresponds to the entry into the 'active' state.

4.1.8 session release: Session release indicates the moment the session has become unavailable to the user to transport packets. For sessions using signalling (or not), this corresponds to the departure from the 'active' state.

4.1.9 weighted charging rate (WCR): WCR is one of the reservation-usage-based charge methods for that session. As shown in the following formula, for each charging parameter, the relevant weight will be negotiated between administrations.

$$\text{Tariff (Accounting)} = \sum C_i W_i$$

where:

C_i Charging Factor

W_i relevant weighted rate

4.2 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CAC	Call Admission Control [b-ITU-T I.371]
CDN	Content Delivery Network
CDR	Charging Data Record
CP_M(.)	Charge Parameter – Modification
CP_R(.)	Charge Parameter – Reservation
CP_S(.)	Charge Parameter – Session Set-up
CP_U(.)	Charge Parameter – Usage
CPR	Chargeable Packet Rate
DSCP	Differentiated Services Code Point
FSA	Flow State Aware
IN-QOSM	QoS Model for signalling Integrated Services controlled- load service with
INI	Inter-Network Interface
OAM	Operation, Administration and Maintenance [b-ITU-T I.610]
PDV	Packet Delay Variation [b-ITU-T I.356]
PPR	Peak Packet Rate [b-ITU-T I.371]
QoS	Quality of Service [b-ITU-T I.356]
SIP	Session Initiation protocol
SLA	Service Level Agreement
UNI	User Network Interface [b-ITU-T I.112] and [b-ITU-T I.413]

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 is administration-specific in case of charging, and subject to agreement between the administrations involved in case of accounting.