



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.144

Amendment 1
(02/2003)

SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS

Public data networks – Network aspects

User information transfer performance parameters
for data networks providing international frame relay
PVC service

Amendment 1

ITU-T Recommendation X.144 (2000) – Amendment 1

ITU-T X-SERIES RECOMMENDATIONS
DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

PUBLIC DATA NETWORKS	
Services and facilities	X.1–X.19
Interfaces	X.20–X.49
Transmission, signalling and switching	X.50–X.89
Network aspects	X.90–X.149
Maintenance	X.150–X.179
Administrative arrangements	X.180–X.199
OPEN SYSTEMS INTERCONNECTION	
Model and notation	X.200–X.209
Service definitions	X.210–X.219
Connection-mode protocol specifications	X.220–X.229
Connectionless-mode protocol specifications	X.230–X.239
PICS proformas	X.240–X.259
Protocol Identification	X.260–X.269
Security Protocols	X.270–X.279
Layer Managed Objects	X.280–X.289
Conformance testing	X.290–X.299
INTERWORKING BETWEEN NETWORKS	
General	X.300–X.349
Satellite data transmission systems	X.350–X.369
IP-based networks	X.370–X.399
MESSAGE HANDLING SYSTEMS	X.400–X.499
DIRECTORY	X.500–X.599
OSI NETWORKING AND SYSTEM ASPECTS	
Networking	X.600–X.629
Efficiency	X.630–X.639
Quality of service	X.640–X.649
Naming, Addressing and Registration	X.650–X.679
Abstract Syntax Notation One (ASN.1)	X.680–X.699
OSI MANAGEMENT	
Systems Management framework and architecture	X.700–X.709
Management Communication Service and Protocol	X.710–X.719
Structure of Management Information	X.720–X.729
Management functions and ODMA functions	X.730–X.799
SECURITY	X.800–X.849
OSI APPLICATIONS	
Commitment, Concurrency and Recovery	X.850–X.859
Transaction processing	X.860–X.879
Remote operations	X.880–X.899
OPEN DISTRIBUTED PROCESSING	X.900–X.999

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

ITU-T Recommendation X.144

User information transfer performance parameters for data networks providing international frame relay PVC service

Amendment 1

Summary

This amendment provides provisional values for the Availability Threshold Criteria as defined in Table 1/X.144.

Source

Amendment 1 to ITU-T Recommendation X.144 (2000) was prepared by ITU-T Study Group 17 (2001-2004) and approved under the WTSA Resolution 1 procedure on 13 February 2003.

FOREWORD

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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.

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ITU-T Recommendation X.144

User information transfer performance parameters for data networks providing international frame relay PVC service

Amendment 1

1) Introduction

This amendment provides provisional values for the Availability Threshold Criteria as defined in Table 1/X.144.

2) Amendments

Replace existing clause 6.1 and Table 1/X.144 with the following text:

6.1 PVC availability function

Four performance parameters, defined in clause 5, are used in computing the PVC availability:

- user information frame loss ratio (for offered traffic conforming with the CIR);
- user information frame loss ratio (for offered traffic conforming with EIR);
- residual frame error ratio; and
- extra frame rate.

These parameters are called the availability decision parameters. Each decision parameter is associated with an outage threshold. These decision parameters and provisional values for their outage thresholds are listed in Table 1.

For PVCs that implement the STATUS messaging procedures defined in ITU-T Rec. X.36, ITU-T Rec. X.76, or Annex A/Q.933, and utilize bidirectional procedures only on the network-to-network interfaces (NNIs), transmission of specific pairs of STATUS message indications shall also serve as availability criteria. For a set of connection sections bounded by boundaries B_i and B_j , the section under test, the transmission of an inactive indication exiting the section under test shall serve as a transition from the available state to the unavailable state. Re-entry to the available state shall be accomplished by the transmission of an active indication exiting the section under test. Periods of scheduled PVC unavailability are excluded (see 6.2.1 below).

Performance is considered independently with respect to each availability decision parameter. If the value of the parameter is equal to or better than the defined outage threshold, performance relative to that parameter is defined to be acceptable. If the value of the parameter is worse than the threshold, performance relative to that parameter is defined to be unacceptable.

A set of connection sections bounded by boundaries B_i and B_j is defined to be *available* (or to be in the available state) if the performance is acceptable relative to all decision parameters and transition criteria.

A set of connection sections bounded by boundaries B_i and B_j is defined to be *unavailable* (or to be in the unavailable state) if the performance of one or more of the four decision criteria is unacceptable, or if a transition to the unavailable state has occurred via the transmission of an inactive indication in a STATUS message exiting the sections bounded by B_i and B_j .

The intervals during which a connection section or concatenated set of connection sections is unavailable are identified by superimposing the unacceptable performance periods for all decision parameters as illustrated in Figure 7.

In order to exclude transient impairments from being considered as periods of unavailability, a single test of the availability state must be 5 minutes or longer. In order to reduce the probability of state transitions during a test of the current availability state, each test should be less than 20 minutes.

Table 1/X.144 – Outage criteria for the availability decision parameters

Availability decision parameters	Criteria (Note 3)
FLR _c (Note 1) – User information frame loss ratio for a population of frames with DE = 0 when all DE = 0 frames conform with the CIR	FLR _c > C ₁
FLR _e (Note 2) – User information frame loss ratio for a population of frames input with DE = 1 when all input DE = 1 frames conform with the EIR and all DE = 0 frames conform with the CIR	FLR _e > C ₂
RFER – Residual frame Error Ratio	RFER > C ₃
EFR – Extra frame Rate	EFR > C ₄
<p>NOTE 1 – Applicable as an availability decision parameter only when CIR > 0. If high FLR is observed, the offered DE = 0 traffic should be reduced to CIR before judging the availability state.</p> <p>NOTE 2 – Applicable as an availability decision parameter only when CIR = 0 and there are no DE = 0 frames. If high FLR is observed, the offered DE = 1 traffic should be reduced to EIR before judging the availability state.</p> <p>NOTE 3 – The following threshold criteria values are specified: C₁ = 10%, C₂ = 25%, C₃ = 1%, C₄ = 1/300. All values are provisional and they need not be met by networks until they are revised (up or down) based on real operational experience.</p> <p>NOTE 4 – The connection section (or set of sections) may also be considered unavailable if the underlying physical layer at either section boundary is unavailable (no signal, alarm condition, etc.) due to causes within the connection section(s).</p>	

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure and Internet protocol aspects
Series Z	Languages and general software aspects for telecommunication systems