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SERIES I: INTEGRATED SERVICES DIGITAL NETWORK

Overall network aspects and functions – Performance
objectives

Reference events for defining ISDN and B-ISDN performance parameters

ITU-T Recommendation I.353

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION I.353

REFERENCE EVENTS FOR DEFINING ISDN AND B-ISDN PERFORMANCE PARAMETERS

Summary

This Recommendation is one of the Recommendations (I.350, I.351 and I.353) that define general aspects of ISDN performance and provide a basis for the definition of specific performance parameters and values in other I-Series and G-Series Recommendations.

The ISDN performance parameters are defined in terms of reference events which can be observed at physical measurement points within an ISDN connection. This Recommendation defines the relevant measurement points and associated performance-significant ISDN reference events.

Source

ITU-T Recommendation I.353 was revised by ITU-T Study Group 13 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 27th of August 1996.

Keywords

B-ISDN, bit synchronization, entry event, errored bit, exit event, measurement point, performance, performance-significant reference event, reference event.

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 (Helsinki, March 1-12, 1993).

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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Recommendation I.353**REFERENCE EVENTS FOR DEFINING ISDN AND B-ISDN
PERFORMANCE PARAMETERS***(revised in 1996)***1 Scope**

This Recommendation defines the measurement points where the performance of ISDNs and B-ISDNs should be evaluated. It defines the performance-significant reference events that can be observed at those measurement points. Specifically, this Recommendation specifies the reference events used in evaluating:

- ISDN call processing performance.
- B-ISDN X.25 packet performance.
- Frame switching performance.
- Frame relaying performance.
- B-ISDN call processing performance.
- B-ISDN ATM cell transfer performance.
- Unrestricted digital bearer service performance.

2 References

The following 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 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 listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T Recommendation I.350 (1993), *General aspects of quality of service and network performance in digital networks, including ISDNs.*
- [2] ITU-T Recommendation I.351 (1993), *Relationships among ISDN performance Recommendations.*
- [3] ITU-T Recommendation I.356 (1996), *B-ISDN ATM layer cell transfer performance.*
- [4] ITU-T Recommendation I.361 (1995), *B-ISDN ATM layer specification.*
- [5] ITU-T Recommendation I.430 (1995), *Basic user-network interface – Layer 1 specification.*
- [6] ITU-T Recommendation I.451 (1993), *ISDN user-network interface layer 3 specification for basic call control.*
- [7] ITU-T Recommendation I.570 (1993), *Public/private ISDN interworking.*
- [8] ITU-T Recommendation Q.764 (1993), *Signalling System No. 7 – ISDN user part signalling procedures.*
- [9] ITU-T Recommendation Q.921 (1993), *ISDN user-network interface – Data link layer specification.*

- [10] ITU-T Recommendation Q.931 (1993), *Digital subscriber Signalling System No. 1 (DSS 1) – ISDN user-network interface layer 3 specification for basic call control.*
- [11] ITU-T Recommendation Q.2762 (1995), *General functions of messages and signals of the B-ISDN user part (B-ISUP) of Signalling System No. 7.*
- [12] ITU-T Recommendation Q.2931 (1995), *Digital subscriber Signalling System No. 2 (DSS 2). User-network interface (UNI) layer 3 specification for basic call/connection control.*
- [13] ITU-T Recommendation Q.2971 (1995), *Digital subscriber Signalling System No. 2 – User-network interface layer 3 specification for point-to-multipoint call/connection control.*
- [14] ITU-T Recommendation X.25 (1996), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit.*
- [15] ITU-T Recommendation X.75 (1995), *Packet-switched signalling system between public networks providing data transmission services.*
- [16] CCITT Recommendation X.134 (1992), *Portion boundaries and packet layer reference events: basis for defining packet-switched performance parameters.*

3 Terms and definitions

For the purposes of ISDN performance Recommendations, the following definitions apply.

3.1 measurement point (MP): A measurement point is located at an interface that separates either customer equipment/customer network (CEQ) or a Switching/Signalling Node (SSN) from an attached transmission system at which ITU-recommended protocols can be observed.

NOTES

1 The term SSN collectively denotes any equipment that accesses the connection in the transport network under consideration.

2 With regard to the definitions of customer equipment and customer network, see Recommendations I.430 and I.570 respectively.

3 As defined, MPs exist at many physical interfaces in a connection. It is not the intention in these Recommendations to specify performance between arbitrary pairs of MPs – particularly pairs within a nation. These Recommendations will only specify the performance of portions delimited by MPTs and MPIs.

4 Recommendation I.356 locates MPs within the ATM interfaces, see 5.9.

3.2 measurement point T (MPT): A measurement point T is located at an interface associated with a T reference point. This interface separates CEQ from an attached digital section.

In order to delimit clearly the national portion and its allocation of performance, the MPT is located at the point that marks the limit of the public network operator's responsibility. This may be different from the ideal location for observing the ITU-recommended protocols. For example, in B-ISDN, the ideal MPs are within the ATM layer. Since a given ATM layer (VP and/or VC) is likely to terminate within CEQ, ATM events will not be directly observable at those termination points.

Two practical methods for measuring at the MPT are:

- i) locating a physical test set at the MPT and replicating the relevant protocol layers outside of the CEQ; or