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Information technology — Enhanced communications transport protocol: Specification of QoS management for n-plex multicast transport

Technologies de l'information — Protocole de transport de communications amélioré: Spécification de la gestion de QoS pour le transport n-plex en multidiffusion

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 14476-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.608.1 (11/2008).

ISO/IEC 14476 consists of the following parts, under the general title *Information technology — Enhanced communications transport protocol*:

— *Part 1: Specification of simplex multicast transport*

— *Part 2: Specification of QoS management for simplex multicast transport*

— *Part 3: Specification of duplex multicast transport*

— *Part 4: Specification of QoS management for duplex multicast transport*

— *Part 5: Specification of N-plex multicast transport*

— *Part 6: Specification of QoS management for N-plex multicast transport*

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Introduction

ECTP is designed to support tightly controlled multicast connections in simplex, duplex and n-plex applications. This part of ECTP (Recommendation ITU-T X.608.1 | ISO/IEC 14476-6) specifies the quality of service (QoS) management functions for the n-plex multicast transport protocol (ECTP-5: Recommendation ITU-T X.608 | ISO/IEC 14476-5).

In the n-plex multicast connection, the participants include one TC-Owner and many TS-users. TC-Owner will be chosen among the TS-users before the connection begins. TC-Owner is at the heart of multicast group communications. It is responsible for overall connection management by governing the connection creation and termination, multicast data transport, and the late join and leave operations. The multicast data transmissions are allowed by TS-users as well as the TC-Owner. Each TS-user is allowed to send multicast data to the group only if it gets a token from the TC-Owner. That is, the multicast data transmissions of TS-users are controlled by the TC-Owner.

For the stable QoS management of the n-plex multicast connection, this Specification provides the QoS management functions such as QoS negotiation, QoS monitoring and QoS maintenance.

The target QoS parameters are negotiated between the TC-Owner and TS-users before the connection creation. During the connection, the status of the connection is monitored by TS-users, and the monitoring result is delivered to Sending TS-users and the TC-owner via control packets. According to the QoS monitoring result, Sending TS-users may adjust their data transmission rate, and the TC-owner may pause or terminate the connection.

This QoS management Specification can be used in multicast applications that want to support various QoS requirements and the corresponding billing/charging models.

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INTERNATIONAL STANDARD
RECOMMENDATION ITU-T

Information technology – Enhanced communications transport protocol: Specification of QoS management for n-plex multicast transport

1 Scope

This Recommendation | International Standard provides a specification of QoS management for accomplishing a desired quality of service in n-plex multicast transport connections. For this purpose, this Specification describes the QoS management operations in n-plex multicast transport connections such as QoS negotiation, QoS monitoring and QoS maintenance. This Recommendation | International Standard is an integral part of ECTP-5 (Rec. ITU-T X.608 | ISO/IEC 14476-5). All of the protocol components, including packet formats and protocol procedures specified in Rec. ITU-T X.608 | ISO/IEC 14476-5, are also valid in this Recommendation | International Standard.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

- Recommendation ITU-T X.601 (2000), *Multi-peer communications framework.*
- Recommendation ITU-T X.602 (2004) | ISO/IEC 16513:2005, *Information technology – Group management protocol.*
- Recommendation ITU-T X.605 (1998) | ISO/IEC 13252:1999, *Information technology – Enhanced Communications Transport Service Definition.*
- Recommendation ITU-T X.606 (2001) | ISO/IEC 14476-1:2002, *Information technology – Enhanced Communications Transport Protocol: Specification of simplex multicast transport.*
- Recommendation ITU-T X.606.1 (2003) | ISO/IEC 14476-2:2003, *Information technology – Enhanced Communications Transport Protocol: Specification of QoS management for simplex multicast transport.*
- Recommendation ITU-T X.607 (2007) | ISO/IEC 14476-3:2008, *Information technology – Enhanced communications transport protocol: Specification of duplex multicast transport.*
- Recommendation ITU-T X.608 (2007) | ISO/IEC 14476-5:2008, *Information technology – Enhanced communications transport protocol: Specification of N-plex multicast transport.*