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INTERNATIONAL STANDARD

ISO/IEC 16512-1

First edition
2005-02-15

Information technology — Relayed Multicast Control Protocol (RMCP) —

Part 1: **Framework**

Technologies de l'information — Protocole de multidiffusion relayé (RMCP) —

Partie 1: Cadre général

Withdrawn

Reference number
ISO/IEC 16512-1:2005(E)

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Published in Switzerland

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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.

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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.

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ISO/IEC 16512-1:2005 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.603.

ISO/IEC 16512 consists of the following parts, under the general title *Information technology — Relayed Multicast Control Protocol (RMCP)*:

— *Part 1: Framework*

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Introduction

This Recommendation | International Standard specifies the Relayed Multicast Protocol (RMCP) used for realizing relayed multicast. Relayed multicast, also known as overlay multicast or application-layer multicast, is a data-delivery scheme for group communications applications over unicast. RMCP employs intermediate Multicast Agents for relaying application data from one or more senders to many receivers.

The design of RMCP has been motivated from the following observations:

In the marketplaces, diverse group applications and services have been provisioned commercially all over the world. Their examples include Internet TV, remote education, real-time streaming media applications, live broadcasting of special events such as the Victoria Show, stock-tickers, and so on.

At present, most of the group applications mentioned above use a replicated IP unicast method to realize multicast services. As a result, those applications have problems about degradation of service quality due to the limitation in the number of simultaneous service users. In the business model that means less revenue or profit.

IP multicast has been known as an effective transport technology for providing multicast services. Nevertheless, the IP multicast has not been deployed widely over the Internet due to several reasons, including the following:

- high deployment cost along with an uncertain Return-on-Investment model;
- IP multicast alone cannot support all kinds of group applications.

Network services which offer, for example, group file transfer or network games, need a reliable multicast transport mechanism. However, even current reliable multicast transport mechanisms still have unresolved problems including that of scalability, flow control, congestion control, etc. Until an appropriate multicast transport mechanism is laid down, group communications applications requiring reliable data transfer will continue to depend on the server-based replicated unicast method.

Although IP multicast has not deployed globally, a lot of local networks have already been equipped with IP multicast transport. For example, Ethernet-based LANs and private networks such as corporate and campus networks substantially provide the multicast transport capability within their local subnet or administrative domains.

Recognizing these observations, there is a crucial need to develop an alternative multicast delivery scheme. RMCP is one of such schemes to realize multicast delivery over the current Internet. It makes good use of existing unicast, multicast and/or multicast tunnelling schemes. In addition, RMCP is designed as several separate forms to support well any kind of group service type. RMCP is expected to provide a substantial solution for group applications over the real-world Internet.

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INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – Relayed multicast protocol: Framework

1 Scope

RMCP is a protocol which is used to realize a relayed multicast data transport scheme. Differently from the conventional IP multicast, RMCP can configure a relayed multicast path that multicast traffic flows by using intermediate end-hosts. RMCP can be applied to the current unicast based Internet where IP multicast has not been deployed completely without any modifications.

This Recommendation | International Standard addresses the basic concepts needed to specify RMCP for relayed multicast. It defines the related terminology and proposes a framework for the future development of RMCP. The framework covers network topology including network entities and the relationship between them, service scenarios, basic operations, and message encoding rules.

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.

- ITU-T Recommendation X.601 (2000), *Multi-peer communications framework*.
- ITU-T Recommendation X.605 (1998) | ISO/IEC 13252:1999, *Information technology – Enhanced Communications Transport Service definition*.
- ITU-T Recommendation X.606 (2001) | ISO/IEC 14476-1:2002, *Information technology – Enhanced Communications Transport Protocol: Specification of simplex multicast transport*.
- ITU-T Recommendation X.606.1 (2003) | ISO/IEC 14476-2:2003, *Information technology – Enhanced Communications Transport Protocol: Specification of QoS management for simplex multicast transport*.

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