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Remote device control application protocol

ITU-T Recommendation T.136

(Previously CCITT Recommendation)

ITU-T RECOMMENDATION T.136

REMOTE DEVICE CONTROL APPLICATION PROTOCOL

Summary

This Recommendation describes how remote device control may be performed using Recommendation T.120 as the transport protocol. The core remote device control services and protocol are described in a separate Recommendation H.282. This Recommendation explains how Recommendation H.282 may be used in a T.120 environment.

Source

ITU-T Recommendation T.136 was prepared by ITU-T Study Group 16 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 27th of May 1999.

FOREWORD

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The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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

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As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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CONTENTS

	Page
1 Scope.....	1
2 Normative references	2
3 Definitions	3
4 Abbreviations.....	3
5 The remote device control application.....	4
5.1 Nodes entering a conference	4
5.1.1 Enrolling in the standard base session.....	4
5.1.2 Capability distribution	4
5.2 Alternative node ID.....	4
5.3 Conducted mode behaviour	4
6 Use of MCS	5
6.1 MCS channel usage.....	5
Annex A – Object identifier assignments	5

Recommendation T.136

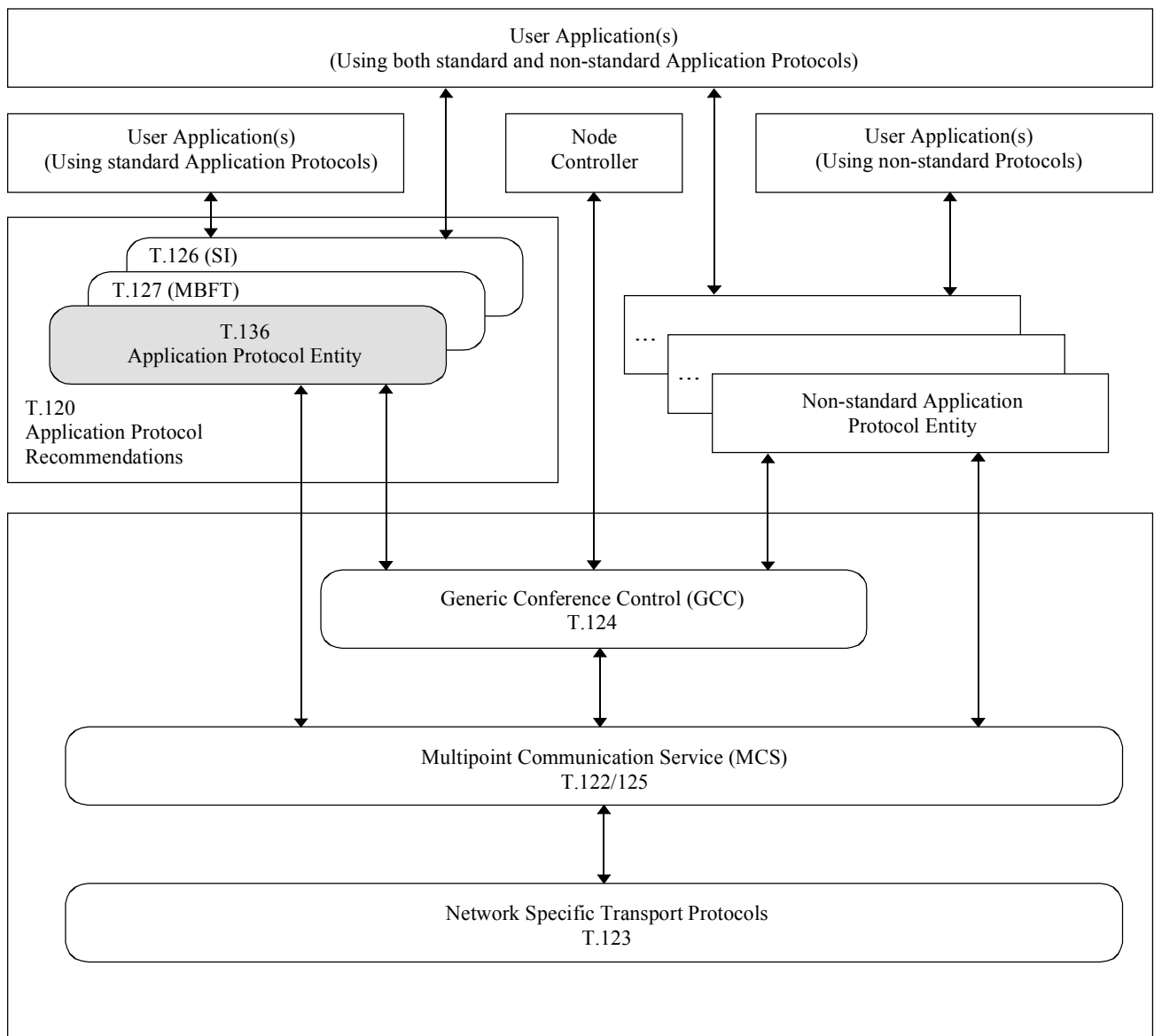
REMOTE DEVICE CONTROL APPLICATION PROTOCOL

(Geneva, 1999)

1 Scope

Recommendation H.282 defines a set of functions and services for performing remote device control. This Recommendation defines how Recommendation H.282 may be applied in a T.120 environment allowing these functions and services to be utilized in a multimedia conference.

This Recommendation provides the standardized application protocol for remote device control in multipoint multimedia communication systems. It is therefore a GCC Client Application and relies on the services defined in companion Recommendation T.124 [Generic Conference Control (GCC)] and Recommendations T.122 and T.125 [Multipoint Communication Service (MCS)], which defines the multipoint delivery mechanism used in this Recommendation.



T1605640-99

Figure 1/T.136 – T-120 infrastructure Recommendations

2 Normative references

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

- ITU-T Recommendation H.243 (1993), *Procedures for establishing communication between three or more audiovisual terminals using channels up to 2 Mbit/s.*
- ITU-T Recommendation T.120 (1996), *Data protocols for multimedia conferencing.*
- ITU-T Recommendation T.121 (1996), *Generic application template.*

- ITU-T Recommendation T.122 (1998), Multipoint communication service – Service definition.
- ITU-T Recommendation T.123 (1996), *Network specific data for multimedia conferencing*.
- ITU-T Recommendation T.124 (1998), *Generic Conference Control*.
- ITU-T Recommendation T.125 (1998), *Multipoint communication service protocol specification*.

3 Definitions

This Recommendation defines the following terms:

- 3.1 application protocol:** Any standard or non-standard protocol specification that makes use of T.120 services.
- 3.2 application protocol entity:** The instantiation of an Application Protocol in a terminal or MCU.
- 3.3 application protocol session:** A group of peer Application Protocol Entities communicating with each other.
- 3.4 controllable device:** A device that has the capability to be controlled remotely in a conference environment.
- 3.5 device:** An entity which provides a specific function, or set of functions, to the conference. Some devices such as cameras and microphones are capable of generating a source to the conference.
- 3.6 multipoint control unit (MCU):** A device used to interconnect multiple terminals and/or further MCUs to allow multiple participants to be connected to single conference. Also known as a bridge.
- 3.7 node:** Any entity that supports the T.120 protocols. This includes both terminal equipment and network elements such as routers and MCUs.
- 3.8 source:** The origin of a real time media stream.

4 Abbreviations

This Recommendation uses the following abbreviations:

APE	Application Protocol Entity
GCC	Generic Conference Control
GCCSAP	Generic Conference Control Service Access Point
MCS	Multipoint Communication Service
MCSAP	Multipoint Communication Service Access Point
MCU	Multipoint Control Unit
PDU	Protocol Data Unit
RDC	Remote Device Control
SAP	Service Access Point

5 The remote device control application

Remote device control may be performed in a multimedia environment using T.120 by the use of the RDC Application Protocol Entity. This APE makes use of the services and the protocol that are defined by Recommendation H.282.

5.1 Nodes entering a conference

In order to participate in a conference, an RDC APE shall establish an MCSAP and a GCCSAP. The method of creating SAPs is a local matter, outside the scope of this Recommendation. When a node joins a conference, its RDC APE shall wait until it receives a GCC-Application-Permission-To-Enroll indication. The RDC APE shall then attempt to enrol in the RDC Registration Session as described in Recommendation T.121; it may optionally join the RDC Standard Base Session as described in 5.1.1.

5.1.1 Enrolling in the standard base session

An RDC APE at a Terminal shall follow the procedures defined in Recommendation T.121 to enrol in the Standard Base Session. It shall join the RDC-CHANNEL-0 channel. The RDC-CHANNEL-0 is used as Session ID.

Once the User Application has received a GCC-Application-Roster-Report indication containing an entry in the Standard Base Session for its local RDC APE, it may start to use RDC functions.

5.1.2 Capability distribution

Recommendation H.282 requires that any devices that are to be made available to the conference for remote control or selection are advertised as capabilities which are distributed to all nodes. The RDC APE shall advertise these in the GCC non-collapsing capability list, using the capability identifiers specified by Recommendation H.282. The application data associated with each non-collapsing capability should contain the device lists using the format specified by Recommendation H.282. The capabilities are passed to GCC on application enrolment.

5.2 Alternative node ID

When a terminal is joined to an H.243 multipoint conference, the terminal should use the Alternative Node ID member of the conference roster to advertise the H.243 site ID as described in Recommendation T.124. This will allow a terminal receiving an H.243 VIN or VIN2 symbol to associate the T.136 node with the stream that is now being received.

5.3 Conducted mode behaviour

RDC is a conductor aware application protocol in that it has two modes of operation: one for non-conducted mode and one for conducted mode, as described in this subclause.

Applications become aware of a GCC Conference Conductor being assigned through receipt of a GCC-Conductor-Assign indication from its GCC provider. This includes the GCC User ID of the conducting node. Applications must determine the identity of the RDC application protocol which inherits the conductors role.

When a conference enters conducted mode the following operations require permission from the conference conductor:

- A node may not lock a new remote device without permission from the conference conductor but is free to unlock any device that it has previously locked without requiring permission.

- A node may not send control requests to a remote device without permission from the conference conductor.

All other operations are unaffected by entering conducted mode.

6 Use of MCS

The RDC APE shall use the PDUs described in Recommendation H.282 to perform remote device control. An RDC PDU may be sent by issuing an MCS-Send-Data request, specifying the User ID of the destination node as the Channel ID and including the PDU in the Data field.

Where Recommendation H.282 specifies the use of a medium priority data channel, the RDC APE shall specify the MCS-Send-Data request with medium priority. Where Recommendation H.282 specifies the use of a high priority data channel, the RDC APE shall specify the MCS-Send-Data request with high priority.

Where MCS offers the ability to send low latency unreliable data, the RDC APE may in turn offer this option to a User Application as specified by Recommendation H.282.

6.1 MCS channel usage

For a point-to-point or multipoint session, RDC utilizes 1 MCS static channel:

- RDC-CHANNEL-0

The RDC-CHANNEL-0 is joined by all RDC APEs.

ANNEX A

Object identifier assignments

Table A.1 lists the assignment of Object Identifiers defined for use by this Recommendation.

Table A.1/T.136 – T.136 object identifier assignment

Object Identifier value	Description
{itu-t recommendation t136 version(0) 1}	This Object Identifier is used to indicate the version of this Recommendation. At this time there is a single standardized version defined.

Static Channel ID assignments

Table A.2 lists the numerical assignment of static channel IDs for the static channels allocated for use by this Recommendation.

Table A.2/T.136 – Static Channel ID Assignments

Symbolic name	Channel ID
RDC-CHANNEL-0	13

ITU-T RECOMMENDATIONS SERIES

- Series A Organization of the work of the 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 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