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Information technology – Home electronic system (HES) architecture – Part 5-101: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote media access profile

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 5-101: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote media access profile

FOREWORD

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International Standard ISO/IEC 14543-5-101 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

The list of all currently available parts of the ISO/IEC 14543 series, under the general title *Information technology – Home electronic system (HES) architecture*, can be found on the IEC website and ISO website.

This publication contains attached files in the form of xml. These files are intended to be used as a complement and do not form an integral part of the publication.

The text of this standard is based on the following documents:

FDIS	Report on voting
JTC1-SC25/2869/FDIS	JTC1-SC25/2885/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

INTRODUCTION

ISO/IEC 14543-5 (all parts) specifies the services and protocol of the application layer for intelligent grouping and resource sharing (IGRS) devices and services in the home electronic system. Some parts reference Classes 1, 2 and 3, which are HES designations specified in the HES architecture standard, ISO/IEC 14543-2-1.

ISO/IEC 14543-5 (all parts) includes the following parts.

– ISO/IEC 14543-5-1: Core protocol
  - Specifies the TCP/IP protocol stack as the basis and the HTTP protocol as the message-exchange framework among devices.
  - Specifies a series of device and service interaction/invocation standards, including device and service discovery protocol, device and service description, service invocation, security mechanisms, etc.
  - Specifies core protocols for a type of home network that supports streaming media and other high-speed data transports within a home.
– ISO/IEC 14543-5-2#: Application profile
  - Based on the IGRS core protocol.
  - Specifies a device and service interaction mechanism, as well as application interfaces used in IGRS basic applications.
  - Multiple application profiles are specified, including:
    i) ISO/IEC 14543-5-21: AV profile
    ii) ISO/IEC 14543-5-22: File profile
– ISO/IEC 14543-5-3: Basic application
  - Includes an IGRS basic application list.
  - Specifies a basic application framework.
  - Specifies operation details (device grouping, service description template, etc.), functional descriptions and service invocation interfaces.
– ISO/IEC 14543-5-4: Device validation
  - Defines a standard method to validate an IGRS-compliant device.
– ISO/IEC 14543-5-5: Device type
  - Specifies IGRS device types used in IGRS applications.
– ISO/IEC 14543-5-6: Service type
  - Specifies basic service types used in IGRS applications.
– ISO/IEC 14543-5-7: Remote access system architecture
  - Specifies the architecture and framework for the remote access of IGRS devices and services in the home electronic system. The remote access communications protocol and application profiles are specified in the following parts of ISO/IEC 14543-5:
    i) ISO/IEC 14543-5-8: Remote access core protocol
    ii) ISO/IEC 14543-5-9: Remote access service platform
    iii) ISO/IEC 14543-5-101: Remote media access profile
    iv) ISO/IEC 14543-5-102: Remote universal management profile
    v) ISO/IEC 14543-5-11: Remote user interface
    vi) ISO/IEC 14543-5-12: Remote access test and verification
  - The relationships among these parts are specified in Part 5-7.

– ISO/IEC 14543-5-8: Remote access core protocol
  - Provides detailed system components, system functional modules, basic concepts of IGRS remote access elements and their relationships, message exchange mechanisms and security related specifications.
  - Specifies interfaces between IGRS remote access (RA) client and service platforms. Defines co-operative procedures among IGRS RA clients.
– ISO/IEC 14543-5-9: Remote access service platform
  - Specifies the IGRS RA service platform (IRSP) architectures and interfaces among servers in the service platforms.
  - Based on ISO/IEC 14543-5-8: Remote access core protocol.
– ISO/IEC 14543-5-101 and ISO/IEC 14543-5-102: Remote access application profiles
  - Defines a device and service interaction mechanism for various applications
  - Based on ISO/IEC 14543-5-8: Remote access core protocol.
  - Two profiles have been developed:
    i) ISO/IEC 14543-5-101: Remote media access profile. This part defines the common requirements for IGRS RA media users and devices in IGRS networks.
    ii) ISO/IEC 14543-5-102: Remote universal management profile. This part specifies a mechanism for integrating devices with both relatively high and low processing capabilities into IGRS networks. It also specifies universal remote device discovery and a management framework.
  - Additional application profiles will be specified in the future.
– ISO/IEC 14543-5-11: Remote user interface
  - Specifies adaptive user interface generation and remote device control mechanisms suitable for different remote access applications and devices.
– ISO/IEC 14543-5-12: Remote access test and verification
  - Specifies a standard method to test and verify IGRS-RA compliant device and service interfaces.

INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 5-101: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote media access profile

1 Scope

This part of ISO/IEC 14543 enables a media connection, resource sharing and co-operation among computers, home appliances and consumer electronics using remote access (RA). Also, users and devices can share and control media resources.

This document specifies:

- an IGRS remote media access profile based on the IGRS RA core protocol and the IGRS RA platform protocol, and
- application rules for the interoperation between IGRS RA media users and devices.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14543-5-1:2010, *Information technology – Home electronic system (HES) architecture – Part 5-1: Intelligent grouping and resource sharing for Class 2 and Class 3 – Core protocol*

ISO/IEC 14543-5-21:2012, *Information technology – Home electronic system (HES) architecture – Part 5-21: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Application profile – AV profile*

ISO/IEC 14543-5-6:2012, *Information technology – Home electronic system (HES) architecture – Part 5-6: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Service type*

ISO/IEC 14543-5-7:2015, *Information technology – Home electronic system (HES) architecture – Part 5-7: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access system architecture*

ISO/IEC 14543-5-8:2017, *Information technology – Home electronic system (HES) architecture – Part 5-8: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access core protocol*

ISO/IEC 14543-5-9:2017, *Information technology – Home electronic system (HES) architecture – Part 5-9: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access service platform*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
remote media access
browsing, searching and playing media content located in remote media servers through an IRSP

Note 1 to entry: In this document, “media” is primarily audio and video.

3.1.2
remote access media client
RAMC
media device in an IGRS RA network that possesses capabilities for browsing, searching, receiving and rendering multimedia content located on an RAMS through an IRSP

Note 1 to entry: Examples of an RAMC device include a TV, set-top box, etc. The RAMC may access contents on the RAMS as the destination device through IRSP in a remote media access application.

3.1.3
remote access media server
RAMS
media device in an IGRS RA network that possesses capabilities for storing multimedia content, accessing an IRSP and transmitting multimedia content to an RAMC according to control commands from the RAMC

Note 1 to entry: Examples of an RAMS device are a PC, network storage server, etc. The RAMS may provide a network interface to other RAMC devices to access content managed by the RAMS as the source device through IRSP in a remote media access application.

3.1.4
service attribute
variable associated with each service type to record service status

3.2 Abbreviated terms

CIS	content index service
CMS	connection management service
DRM	digital right management
ID	identification
IGRS	intelligent grouping and resource sharing
IGRSDSIM	IGRS dynamic service invocation module
MCTMS	media client transport management service
MSTMS	media server transport management service
MTS	media transcoding service
QoS	quality of service
RAMC	remote access media client
RAMS	remote access media server

IGRS	intelligent grouping and resource sharing
IRSP	IGRS RA service platform
IP	internet protocol
MC	media client
MS	media server
RA	remote access
URI	universal resource identifier
XMPP	extensible messaging and presence protocol
WSDL	Web Services Description Language

4 Conformance

The application profile for a remote media access application shall be implemented as specified in Clause 5. The application scenarios of remote media access shall be implemented as specified in Clause 6. The remote media access system architecture and components of an IGRS Remote Access Media Server (RAMS) and Remote Access Media Client (RAMC) shall conform to Clause 7. The message and data formats used in a remote media access application shall conform to Clause 8.

5 Overview of IGRS remote media access profile

IGRS remote access (RA) application profiles are based on the IGRS RA core protocol (ISO/IEC 14543-5-8:2017) and the IGRS RA service platform protocol (ISO/IEC 14543-5-9:2017). The IGRS RA application profiles specify functional models, service models for different applications and interactive processes and interfaces between the applications and core protocol. Manufacturers may develop additional applications based these profiles. The applications developed based on these profiles may interoperate with each other.

An IGRS remote media access profile is one of the IGRS RA application profiles. It is based on the IGRS RA core protocol specified in ISO/IEC 14543-5-8:2017. All the basic access and play control functions of media are based on the IGRS AV application profile specified in ISO/IEC 14543-5-21:2012. ISO/IEC 14543-5-21:2012 specifies media server (MS) and media client (MC) service functionalities of the AV profile. ISO/IEC 14543-5-6:2012 specifies the service types and implementation methods in ISO/IEC 14543-5-21:2012.

This document specifies the service realization methods in an IGRS RA network, and clarifies the differences between IGRS remote media access applications in an IGRS RA network and IGRS media applications in a local IP network.

6 Application scenarios of remote media access

The possible application scenarios of IGRS RA media include the following.

a) Users can discover the local IGRS devices in a home network (TV, media player, set-top-box, etc.) and the media content stored or played in these devices with the users' remote IGRS devices. Users can search the media content and control the rendering of the content (i.e. play, stop, pause, continue, re-play, etc.).

b) Users can use the local IGRS devices (TV, media-player, set-top box, etc.) in a home network to detect IGRS RA devices and media content stored or being played in these devices. Users can search the media content and control the rendering of the content (i.e. play, stop, pause, continue, re-play, etc.).

c) When users are playing media content in an IGRS network, they can pause the play functions and save the current play location with a bookmark. They can resume the play functions from the paused location with another IGRS device.

7 Remote media access application system

7.1 Overview

In an IGRS remote media access application system, an RAMS is a media content storage device. It grants the search and transfer rights to other devices. An RAMC is a device to access the media content stored in an RAMS. It can browse, search, receive and render these contents.

RAMS devices and RAMC devices in an IGRS media access application shall establish a sibling relationship as described in 10.1 of ISO/IEC 14543-5-8:2017. Alternatively, the owner of the RAMS shall authorize the access right of the RAMS to the owner of the RAMC through the device access rights configuration mechanism described in Clause 9 of ISO/IEC 14543-5-8:2017.

An IGRS remote media access profile is an extension of IGRS AV profiles specified in ISO/IEC 14543-5-21:2012. It specifies an application profile for dedicated media access and invocation functionalities based on the RA system architecture specified in Figure 1 of ISO/IEC 14543-5-7:2015. The basic media invocation flow services shall follow ISO/IEC 14543-5-21:2012 and ISO/IEC 14543-5-6:2012.

Figure 1 shows the interaction model of an IGRS remote media access application.

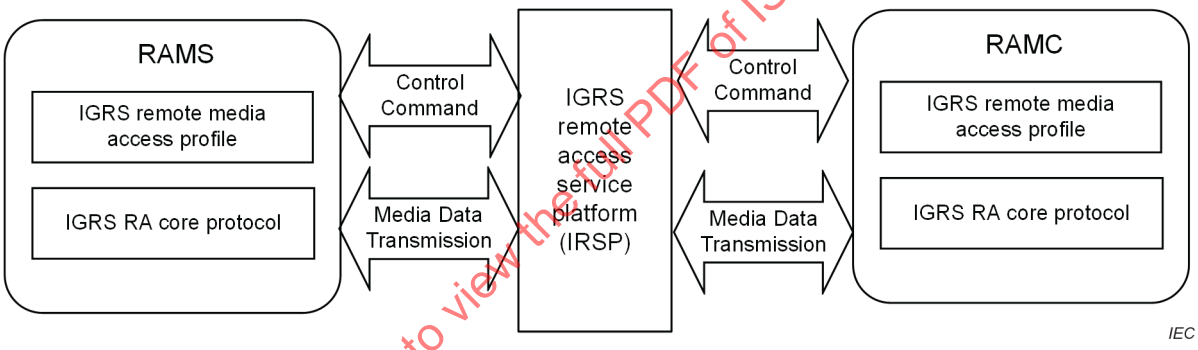


Figure 1 – Interaction model of IGRS RA media access application

The RAMS and RAMC are both IGRS RA devices that are connected to the IRSP and shall follow ISO/IEC 14543-5-9:2017. Each of them shall comply with the lower layer of the IGRS-RA core protocol specified in ISO/IEC 14543-5-8:2017 and the higher layer IGRS remote media access profile specified in this document.

The transmitted data between a RAMS and RAMC primarily consist of control commands and media data. The control commands include content indexing commands and media invocation commands.

The content indexing commands are used by the RAMC to index the content in RAMS. The media invocation commands are used by the RAMC to control the media content transfer of the RAMS.

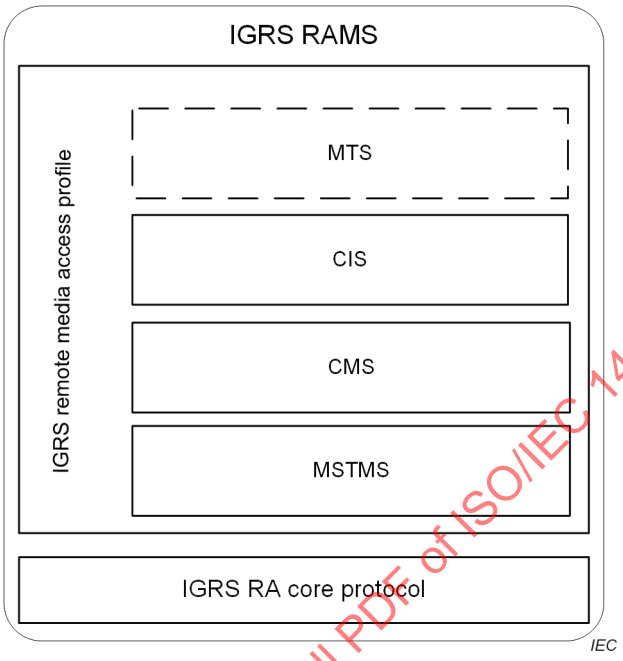
The media data are transferred between the RAMS and the RAMC according to the media invocation commands.

7.2 IGRS RAMS

The IGRS RAMS is a device with an Internet connection, shall comply with the IGRS RA core protocol of ISO/IEC 14543-5-8:2017, and has the capability of storing multimedia content, accessing IRSP and transmitting multimedia content to an RAMC according to control commands from the RAMC. The IGRS RAMS usually provides the managed content to an

IGRS RAMC as the initiating device in media application. The IGRS RAMC could access, manage and render this content through the IGRS-RA network. The IGRS RAMS could also function as a target device of a media access application when the IGRS RAMC uploads media contents to it.

Components of the IGRS RAMS are shown in Figure 2.



NOTE The block noted by a dashed line is optional.

Figure 2 – Components of IGRS RAMS

The IGRS RAMS shall comply with ISO/IEC 14543-5-8:2017 and shall provide services of a content index service (CIS), connection management service (CMS), media server transport management service (MSTMS) and optional media transcoding service (MTS).

The components of the RAMS are summarized in a) to d).

a) CIS: The IGRS RAMS shall support CIS so that an IGRS RAMC could browse, search and access the stored contents. Through the description of content element data, CIS provides the basic information to match the media format and transmission mechanism in the media playback mode between an IGRS RAMS and IGRS RAMC. CIS also provides the necessary supports for senior personality content management. The procedure calls for CIS are specified in 8.1 of ISO/IEC 14543-5-6:2012.

b) CMS: An IGRS RAMS shall support a CMS to manage the connection between an IGRS RAMS and an IGRS RAMC. The IGRS RAMS shall execute the interface function GetProtocolInfo() of CMS, so that other devices in a network may query the media format supported by the RAMS and get the connect management and transmit control mechanism supported by the RAMS.

   A CMS includes the following interface functions:

   1) query RAMS supported media format;
   2) get supported connect management and transmission control mechanism;
   3) set, inquire and release the connection between an RAMS and RAMC in an IGRS remote media application.

   The procedure calls for a CMS are specified in 8.2 of ISO/IEC 14543-5-6:2012.

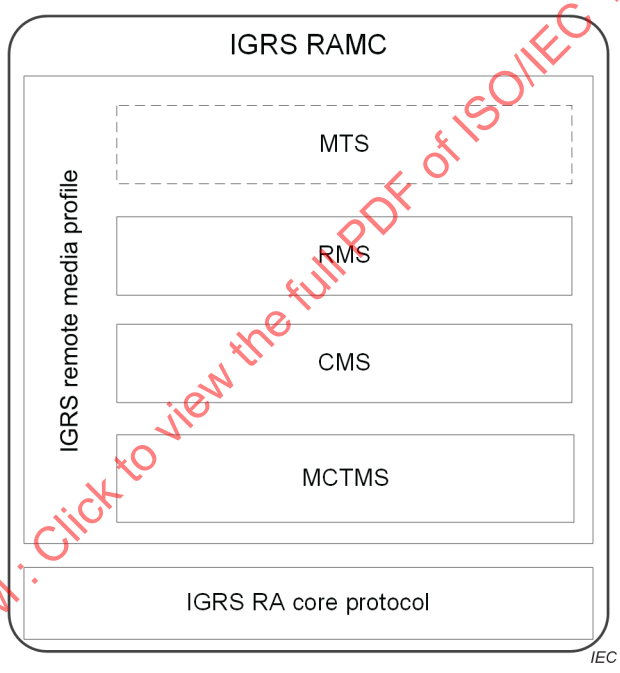
c) MSTMS: An IGRS RAMS shall support an MSTMS specified in 8.3 of ISO/IEC 14543-5-6:2012 to control the transmission of media, data flow and control commands. An MSTMS specifies the transmission control interface of data streams initiated by an RAMS in IGRS remote media access applications.

d) MTS: An IGRS RAMS may execute the optional MTS. When IGRS RAMS detects that the media format ordered by an IGRS RAMC through CIS is not supported by the IGRS RAMC, the IGRS RAMS shall invoke MTS to transcode the media format and then send the transcoded contents to the IGRS RAMC. MTS is specified in Annex A.

7.3 IGRS RAMC

An IGRS RAMC is a client device of an IGRS remote media access system such as TV, set-top, Internet media recorder or Internet media player, etc. In an IGRS remote media access application, an IGRS RAMC is a device for accessing and operating the content in an IGRS RAMS through an Internet interface. An IGRS RAMC may also initiate content management through uploading content stored in other devices to an IGRS RAMS. The IGRS RAMC may contain a media transcoding service.

The components of the IGRS RAMC are shown in Figure 3.



NOTE The block noted by a dashed line is optional.

Figure 3 – Components of IGRS RAMC

After browsing or searching and selecting the contents to be played or recorded in an IGRS RAMS, the IGRS RAMC shall establish a connection to an IGRS RAMS and execute transmission management of the media content.

The IGRS RAMC shall comply with ISO/IEC 14543-5-8:2017 and shall provide services of an RMS, CMS, Media Client Transport Management Service (MCTMS), and optional MTS.

The components of the RAMC are summarized in a) to d).

a) RMS: The RAMC shall execute an RMS specified in ISO/IEC 14543-5-6:2012 to support content display in playback devices. The RMS specifies the interface functions to manage the rendering of content on a RAMC in an IGRS remote media access system, such as the intensity modulation, contrast adjustment, volume adjustment, etc. The procedure calls for an RMS are specified in 8.5 of ISO/IEC 14543-5-6:2012.

b) CMS: The RAMC shall support a CMS to manage the connection between an IGRS RAMC and IGRS RAMS. The IGRS RAMC shall execute the GetProtocolInfo() interface function of a CMS so that other devices on the Internet may query the media format supported by the RAMC and get the connection management and transmission control mechanism supported by the RAMC.

A CMS includes the following interface functions:

1) query IGRS RAMC supported media format;
2) get supported connection management and transmission control mechanism;
3) set, query and release the connection between IGRS RAMS and IGRS RAMC in an IGRS remote media system.

The procedure calls for a CMS are specified in 8.2 of ISO/IEC 14543-5-6:2012.

c) MCTMS: An IGRS RAMC shall support an MCTMS, which specifies IGRS RAMC-initiated transmission control interface functions of a media data stream in an IGRS remote media system. The MCTMS controls the transmission of media data streams and control signals. The specification refers to 8.4 of ISO/IEC 14543-5-6:2012.

d) MTS: An IGRS RAMC may execute the optional MTS. When the IGRS RAMC detects an unsupported media format in an IGRS RAMS through CIS, the IGRS RAMC invokes an MTS to transcode the media format and then provides the transcoded media to an RMS. MTS is specified in Annex A.

7.4 Extension of RAMS and RAMC modules

In an IGRS remote media access system, modules included in RAMS and RAMC may be extended dynamically to support more services and functions in addition to the modules listed in 7.2 and 7.3. A RAMS and RAMC may extend the digital right management (DRM) module, quality of service (QoS) module, remote user interface module (specified in ISO/IEC 14543-5-11:2018) and user management module, etc. as shown in Figure 4.

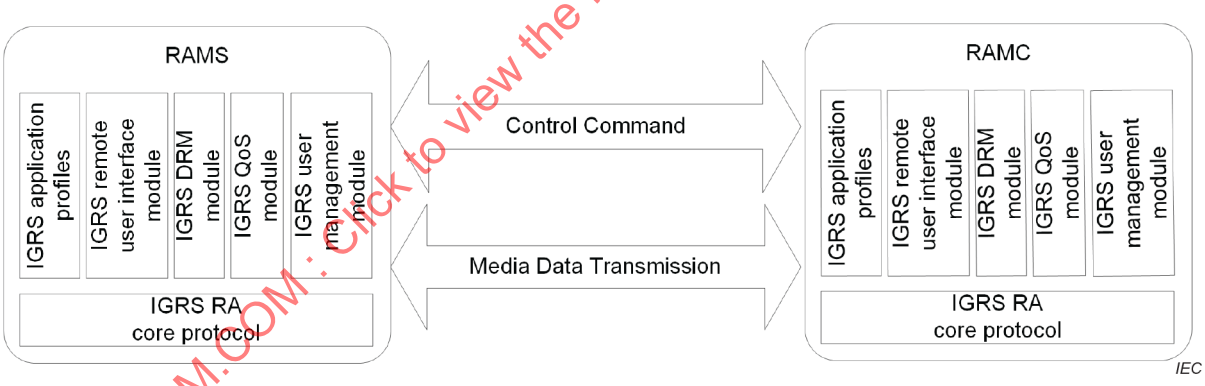


Figure 4 – Extension of RAMS and RAMC modules

8 Message data format of remote media access application

8.1 Classification of message and data format

In remote media access applications, the message exchange should follow the requirement in Clause 11 of ISO/IEC 14543-5-8:2017. According to the message transmission types between the initiating device and the target device, four different message types are specified in an IGRS remote media access application.

a) Message type 1: request message sent from an initiating device to a target device

The control of the remote media access is realized by the command initiating device sending a request message to the target device. Generally, the control command-initiating device sends a media content index request message and a series of media-rendering

control messages to the target to control the invocation of the media in the target device. The format of this request message is shown in Message 1.

```
<iq id="message series number" to="device connection ID of RAMS" from="device ID of RAMC" type="get">
  <query xmlns="http://www.igrs.org/spec2.0/basic#control">
    <data>
      data_base64
    </data>
  </query>
</iq>
```

Message 1 – Format of request message

NOTE 1 Italics indicate where content is to be inserted; all other text in the message specification is fixed in this document.

NOTE 2 All contents in the message specification are mandatory in this document.

NOTE 3 The “data_base64” of this document is the data after base64 coding to contents requested. The format transforming specification of base64 is shown in 6.8 of IETF RFC 2045. The other base64 commands in this document are same.

b) Message type 2: response message returned from the target device to the initiating device

After receiving the request message from the initiating device, the target device must send a response message to this request to the initiating device. The response message format is shown in Message 2.

```
<iq id="message series number" to="device connection ID of initiator" from="target device connection ID" type="result">
  <query xmlns="http://www.igrs.org/spec2.0/basic#control">
    <data>
      data_base64
    </data>
  </query>
</iq>
```

Message 2 – Format of response message

c) Message type 3: message pushed from an initiating device to a target device

Sometimes the initiating device wants to push some messages to the target device without any reply from the target device. This may happen when the RAMS wants to advertise some information or notification to the RAMC, i.e. payment notification, alarm notification, etc.

The format for this kind of push message is shown in Message 3:

```
    <message id="message series number" from="initiative device ID" to="target device ID" type="normal">
  <query xmlns="http://www.igrs.org/spec2.0/basic#push">
    <data>
      data_base64
    </data>
  </query>
    </message>
```

Message 3 – Format of push message

d) Message type 4: multi-media data transmission

The RAMS shall transmit media data to the RAMC according to a control command from the RAMC after the IGRS RA connection is established. The RAMC shall transmit media data to the RAMS when it uploads the data to the RAMS using a multi-media data transmission method. The multi-media data transmission method may comply with the bytestreams transmission of SOCKS5 specified in XMPP XEP-0065.

Annex A
(normative)

Specification of MTS

A.1 Overview

MTS allows the media to be transcoded. When the media content in an RAMS cannot be rendered in the RAMC because of the undecoded media format, the MTS in the RAMS or the RAMC shall be invoked according to the media type (audio, video, text, etc.), encoding format (unsupported formats) and size (undersized or oversized). This starts the transcoding or controls multiple active instances of the transcoding.

MTS is created by PrepareForTranscoding(). MTS can be optionally provided in RAMS and RAMC. MTS can also be provided by the MS and MC in local IGRS network.

The Web Services Description Language (WSDL) of MTS is specified in Annex B.

A.2 MTS service type

The service type of MTS is as below:

Urn:IGRS:Service:ServiceType:MediaTranscoding:1

A.3 MTS interface invocation reference flow

The MTS interface invocation reference flow is shown in Figure A.1.

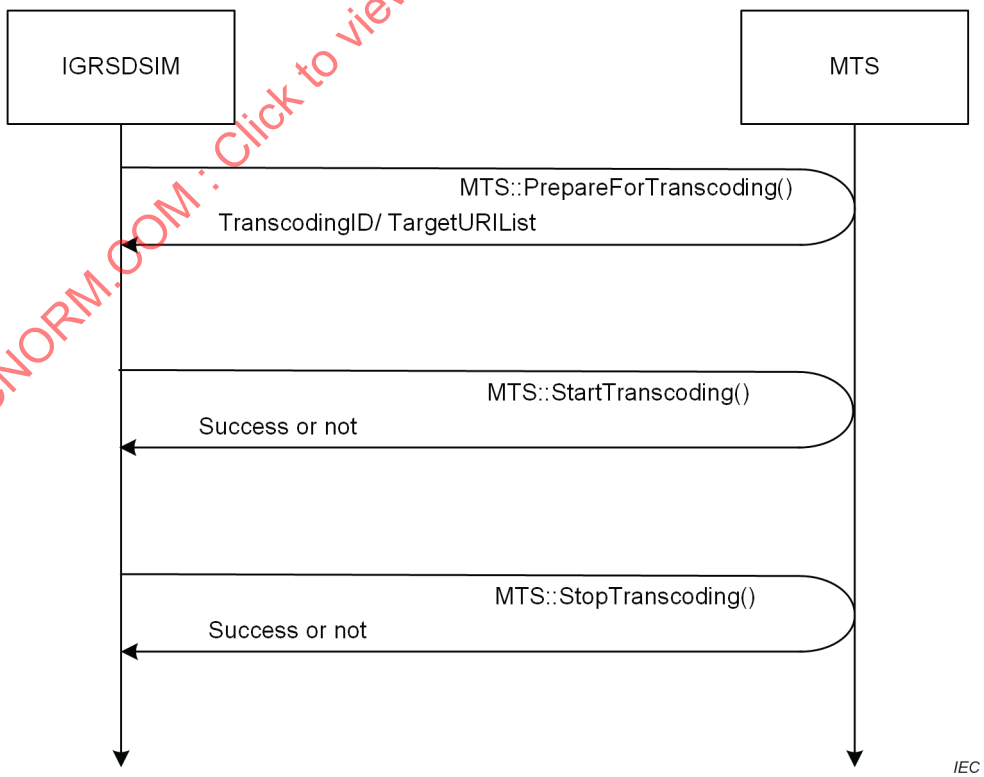


Figure A.1 – Service invocation flow of MTS

The service invocation flow is described as follows.

a) MTS discovery: An IGRS Dynamic Service Invocation Module (IGRSDSIM) discovers MTS using an IGRS service discovery mechanism.

b) Select transcoding contents: An IGRSDSIM invokes MTS::PrepareForTranscoding() to prepare the contents to be transcoded. It puts the contents to be transcoded to the available IP address list returned by the MS or RAMS. If the MTS supports transcoding the contents, the MTS shall return the TargetURIList of the universal resource identifier (URI), which has the media to be transcoded.

c) Start transcoding: The MTS invokes transcoding management, i.e. start, stop, etc.

d) Stop transcoding: If the media transcoding is completed, the MTS shall stop the transcoding and return the transcoding result.

A.4 MTS service attributes

Service attributes of MTS are shown in Table A.1.

Table A.1 – MTS service attributes

Name of service attribute	Data type	Field explanation
TranscodingId	Type_TranscodingId	Unique ID of transcoding service instance
TranscodingState	Type_TranscodingState	Present media transcoding status
SourceURIList	Type_URIList	URI list of media source which MTS will transcode. Each URI shall include media format information
TargetURIList	Type_URIList	URI list of transcoded media location

Subscription and notification of any updates of a service attribute of the MTS shall follow the general service attribute subscription and notification rules specified in ISO/IEC 14543-5-1:2010.

A.5 MTS data types

The service data types of MTS are shown in Table A.2.

Table A.2 – MTS data types

Data type name	Data type	Field explanation
Type_TranscodinId	unsigned int	Unique ID of transcoding service instance
Type_TranscodingState	String	Transcoding states, including IN_PROGRESS, STOPPED,ERROR and COMPLETED
Type_URIList	String	URI list of the media content to be transcoded

A.6 MTS invocation interfaces

A.6.1 PrepareForTranscoding

Functional description: Initiate MTS instance and prepare for transcoding.

Input/Output parameters are shown in Table A.3.

Table A.3 – Input/Output parameters of PrepareForTranscoding

Parameter	Input/Output	Data type	Field explanation
SourceURIList	Input	Type_URIList	Media source URI list in MS or RAMS. Transcoding needs this location information. Each URI shall include a valid MediaFormat which includes the format of the media
TranscodingId	Output	Type_TranscodingId	Unique ID of an MTS instance
TargetURIList	Output	Type_URIList	URI list of the items to be transcoded. If multiple codec transcoding is supported, all supported codec shall be the same as MediaFormat

Return Value: Success: 0

Failure: E1, E2, E3 (see error codes in A.6.5).

A.6.2 StartTranscoding

Functional description: start transcoding.

Input/Output parameters are shown in Table A.4.

Table A.4 – Input/Output parameters of StartTranscoding

Parameter	Input/Output	Data type	Field explanation
InstanceId	Input	Type_TranscodingId	Unique ID of MTS instance
TargetURIList	Input	Type_URIList	URI of chosen codec. The codec information is listed in the MediaFormat field

Return Value: Success: 0

Failure: E1, E2, E3 (see error codes in A.6.5).

A.6.3 StopTranscoding

Functional description: stop current transcoding.

Input/Output parameters are shown in Table A.5.

Table A.5 – Input/Output parameters of StopTranscoding

Parameter	Input/Output	Data type	Field explanation
InstanceId	Input	Type_TranscodingId	Unique ID of MTS instance

Return Value: Success: 0

Failure: E1, E2, E3 (see error codes in A.6.5).

A.6.4 GetTranscodingStatus

Functional description: get current transcoding status.

Input/Output parameters are shown in Table A.6.

Table A.6 – Input/Output parameters of GetTranscodingStatus

Parameter	Input/Output	Data type	Field explanation
InstanceId	Input	Type_TranscodingId	Unique ID of MTS instance
TranscodingState	Output	Type_TranscodingState	Current states of MTS instance

Return Value: Success: 0

Failure: E1, E2, E3 (see error codes in A.6.5).

A.6.5 MTS error codes

MTS error codes are shown in Table A.7.

Table A.7 – MTS error codes

Error code	Error code name	Value	Field explanation
0	RETURN_SUCCESS	0	Success
E1	RETURN_FAILED	1	Failed
E2	RETURN_INVALIDPARA	2	Invalid parameter
E3	RETURN_ERRORFORMATPARA	3	Parameter format error
E4	RETURN_INTERFACEINEXISTENCE	4	Interface not exist