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INTERNATIONAL STANDARD

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

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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.

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– 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.

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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

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

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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.

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ISO/IEC 14543-5-101:2019

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

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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.

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3.1.3
remote access media server
RAMS

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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

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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.

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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.