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INTERNATIONAL STANDARD

Information technology – Home electronic system (HES) architecture – Part 5-12: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access test and verification

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 5-12: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access test and verification

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International Standard ISO/IEC 14543-5-12 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.

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

FDIS	Report on voting
JTC1-SC25/2854/FDIS	JTC1-SC25/2865/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 14543-5-21 and ISO/IEC 14543-5-22: 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.), function definitions 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 function 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 the 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

  - Defines 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 5-12: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Remote access test and verification

1 Scope

This part of ISO/IEC 14543

– specifies the test and verification methods for an IGRS remote access (RA) user or device,

– defines the structure of a user and device testing system for IGRS remote access,

– describes and specifies the exchange process between a user or device-under-test with a standard IGRS RA service platform (IRSP), and

– describes and specifies the rules to have validating messages.

This document is applicable to the test and verification of an IGRS RA device or user.

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

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

IETF RFC 4422, *Simple Authentication and Security Layer (SASL)*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 14543-5-8, ISO/IEC 14543-5-9 and the following 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
standard device
IGRS RA device that is used as a reference against which a device-under-test is evaluated for conformance to ISO/IEC 14543-5-8

3.1.2
standard IRSP
IGRS RA service platform that is used as a reference against which a device-under-test is evaluated for conformance to ISO/IEC 14543-5-8

3.1.3
standard user
IGRS RA user interface that is used as a reference against which a user-under-test or device-under-test is evaluated for conformance to ISO/IEC 14543-5-8

3.2 Abbreviated terms

IGRS intelligent grouping and resource sharing

IRSP IGRS RA service platform

RA remote access

SASL Simple Authentication and Safety Layer

4 Conformance

For conformance to this document, the following applies.

- IGRS RA test and verification system shall conform to Clause 5.
- The test suite structure shall conform to Clause 6.
- The test and verification for an IGRS RA user shall conform to Clause 7.
- The test and verification for an IGRS RA device shall conform to Clause 8.

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5 Overview

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5.1 Purpose

ISO/IEC 14543-5-8 may be implemented with various IGRS RA user interfaces and devices. Service providers and product manufacturers may have different implementations. To ensure all users and devices in an IGRS network interconnect properly, test and verification methods are needed.

As with ISO/IEC 14543-5-4, the IGRS RA test is a version of black box testing. Clause 5 specifies the conformance test suites to test and verify the mandatory and optional message exchanges supported by IGRS RA users or devices. The test results are used for verifying that the user interface or device is an IGRS implementation.

5.2 Test configuration

The basic environment configuration for IGRS RA conformance testing is shown in Figure 1.

NOTE The “user” being tested is the interface software that captures user inputs when operating an IGRS system.

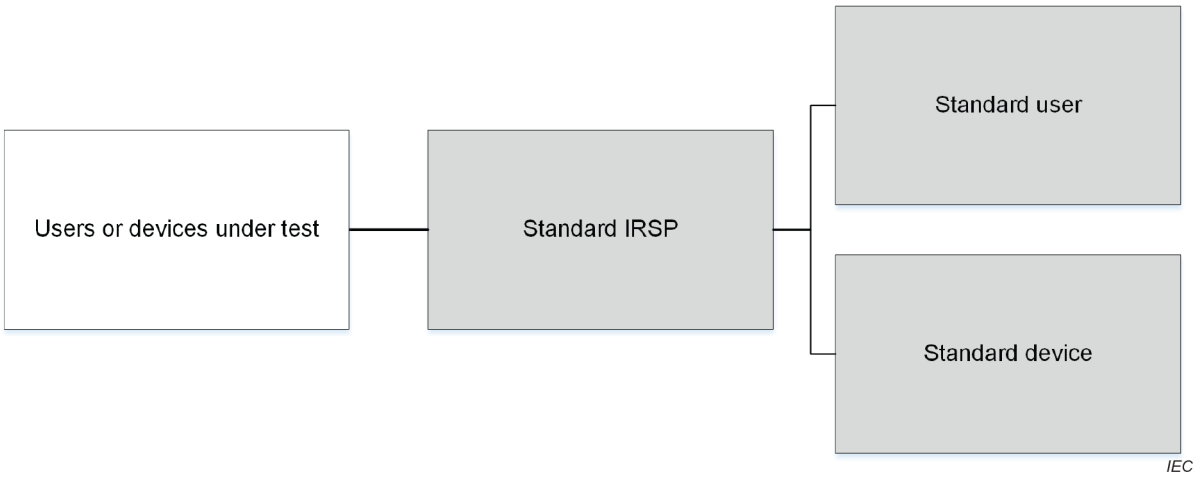

Figure 1 – Environment configuration for IGRS RA conformance test

The user or device-under-test sends various test messages to the standard IRSP or to the standard user or device through a standard IRSP and receives the feedback from the standard IRSP.

IGRS verification does not consider the circumstances where a message is lost from the user or device-under-test in the network transmission link.

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5.3 Requirement of verification

According to requirements in ISO/IEC 14543-5-8, IGRS RA users or devices shall pass all related test cases.

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5.4 Test environment

Tests shall be implemented in a normal operating environment. The test environment shall satisfy the conditions shown in Table 1.

Table 1 – Test conditions under normal environment

Conditions	Minimum	Maximum
Atmosphere	86 kPa	106 kPa
Temperature	15 °C	30 °C
Relative humidity	20 %	85 %

6 IGRS RA test suite structure

6.1 Structure overview

As shown in Figure 2, there are two hierarchies of IGRS RA conformance test suites.

The first hierarchy includes two suite sets: IGRS RA user conformance test suite for users and IGRS RA device conformance test suite for devices.

The second hierarchy includes detailed test suites according to the various IGRS RA functions specified in ISO/IEC 14543-5-8 in order to test the sub-functions.