INTERNATIONAL STANDARD

ISO/IEC
14543-3-3

First edition
2007-01

Information technology –
Home electronic system (HES) architecture –

Part 3-3:
User process for network based control
of HES Class 1

ISO **IEC**

Reference number
ISO/IEC 14543-3-3:2007(E)

iTeh STANDARD PREVIEW

(standards.iteh.ai)

INTERNATIONAL STANDARD

ISO/IEC
14543-3-3

First edition
2007-01

Information technology –
Home electronic system (HES) architecture –

Part 3-3:
User process for network based control
of HES Class 1

PRICE CODE **G**

For price, see current catalogue

CONTENTS

iTeh STANDARD PREVIEW
(standards.iteh.ai)

**INFORMATION TECHNOLOGY -
HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –**

Part 3-3: User process for network based control of HES Class 1

FOREWORD

1) ISO (International Organization for Standardization) and IEC (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. Their preparation is entrusted to technical committees; any ISO and IEC National Committee interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with ISO and IEC also participate in this preparation.

2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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.

3) The formal decisions or agreements of IEC or ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC and ISO National Committees.

4) IEC, ISO or ISO/IEC Publications have the form of recommendations for international use and are accepted by IEC and ISO National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO or ISO/IEC Publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

5) In order to promote international uniformity, IEC and ISO National Committees undertake to apply IEC, ISO or ISO/IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO/IEC Publication and the corresponding national or regional publication should be clearly indicated in the latter.

6) ISO or IEC provide no marking procedure to indicate their approval and cannot be rendered responsible for any equipment declared to be in conformity with an ISO/IEC Publication.

7) All users should ensure that they have the latest edition of this publication.

8) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.

9) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

10) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 14543-3-3 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard is a product family standard. It is not intended to be used as a stand-alone standard.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the title page.

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

INTRODUCTION

The application interface layer is the layer between the application layer and the application. It contains the communication relevant tasks of the application. It eases the communication task of the application by offering a communication interface that abstracts from many application layer details.

This International Standard allows single-processor and dual-processor device designs. A dual processor device uses additional services to communicate via a serial External Message Interface with the external user application running in the second processor.

The following clauses specify the client and server functioning and the communication interface of the internal user application located in the Bus Access Unit (BAU).

The application interface layer contains the following objects and the access routines to them.

– **Group objects**: these can be accessed via Transport layer Service Access Points (TSAPs) on multicast communication services; see the corresponding clause in ISO/IEC 14543-3-2. Group objects may also be references to interface objects.

– **Interface objects**: these can be accessed via application services on point-to-point connectionless and point-to-point connection-oriented communication modes. The interface objects are divided into system interface objects and application interface objects.

  • System interface objects are
    – the device object,
    – the group address table object,
    – the association table object, and
    – the application object.

  • System interface objects are relevant for network management as specified in ISO/IEC 14543-3-4.

  • Application interface objects are objects defined in the user application. They may be defined by the internal or external user application, based on interface object structure rules defined in this document. Application interface objects may also be referenced by a group object reference.

The following clauses specify the data structures of each of the application interface layer objects. Additionally, they define by which application services these objects are accessible. Both the object client and object server functioning may be implemented by the external or the internal application interface layer. It is recommended to locate the group communication objects, the interface objects and the resource objects in the internal application interface layer.

Currently, ISO/IEC 14543, *Information technology – Home Electronic System (HES) architecture*, consists of the following parts:

Part 2-1:   *Introduction and device modularity*
Part 3-1:   *Communication layers – Application layer for network based control of HES Class 1*
Part 3-2:   *Communication layers – Transport, network and general parts of data link layer for network based control of HES Class 1*
Part 3-3:   *User process for network based control of HES Class 1*
Part 3-4:   *System management – Management procedures for network based control of HES Class 1*
Part 3-5:   *Media and media dependent layers – Power line for network based control of HES Class 1*
Part 3-6:   *Media and media dependent layers – Twisted pair for network based control of HES Class 1*
Part 3-7:   *Media and media dependent layers – Radio frequency for network based control of HES Class 1*
Part 4:   *Home and building automation in a mixed-use building (technical report)*
Part 5-1:   *Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Core ptotocol (under consideration)*
Part 5-2:   *Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Device certification (under consideration)*

Additional parts may be added later.

INFORMATION TECHNOLOGY –
HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 3-3: User process for network based control of HES Class 1

1   Scope

This part of ISO/IEC 14543 specifies the structure and functioning of servers for the objects which form the interface between the application layer and the application and management.

2   Normative references

The following referenced documents are indispensable for the application 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 14543-3-1, *Information technology – Home Electronic System (HES) architecture – Part 3-1: Communication layers – Application layer for network based control of HES Class 1*

ISO/IEC 14543-3-4, *Information technology – Home Electronic System (HES) architecture – Part 3-4: System Management – Management procedures for network based control of HES Class 1*

3   Terms, definitions and abbreviations

3.1   Terms and definitions

For the purposes of this document the terms and definitions given in ISO/IEC 14543-3-1 apply.

3.2   Abbreviations

ASAP	Application layer Service Access Point
BAU	Bus Access Unit
EMI	External Message Interface
HES Class 1	refers to simple control and command
HES Class 2	refers to Class 1 plus simple voice and stable picture transmission
HES Class 3	refers to Class 2 plus complex video transfers
TSAP	Transport layer Service Access Point

4   Conformance

An entity of operational exchange conforming to this International Standard shall support the group objects specified in clause 6.

The implementation of interface objects specified in clause 7 is optional.

5   Object models

This International Standard specifies two kinds of objects for operational exchanges.

a) Group objects
    group objects shall be used to support the shared variable model.

b) Interface objects
    interface objects shall be used to support the client/server model and, if they are
    referenced by group objects, also the shared variable model of the group objects.

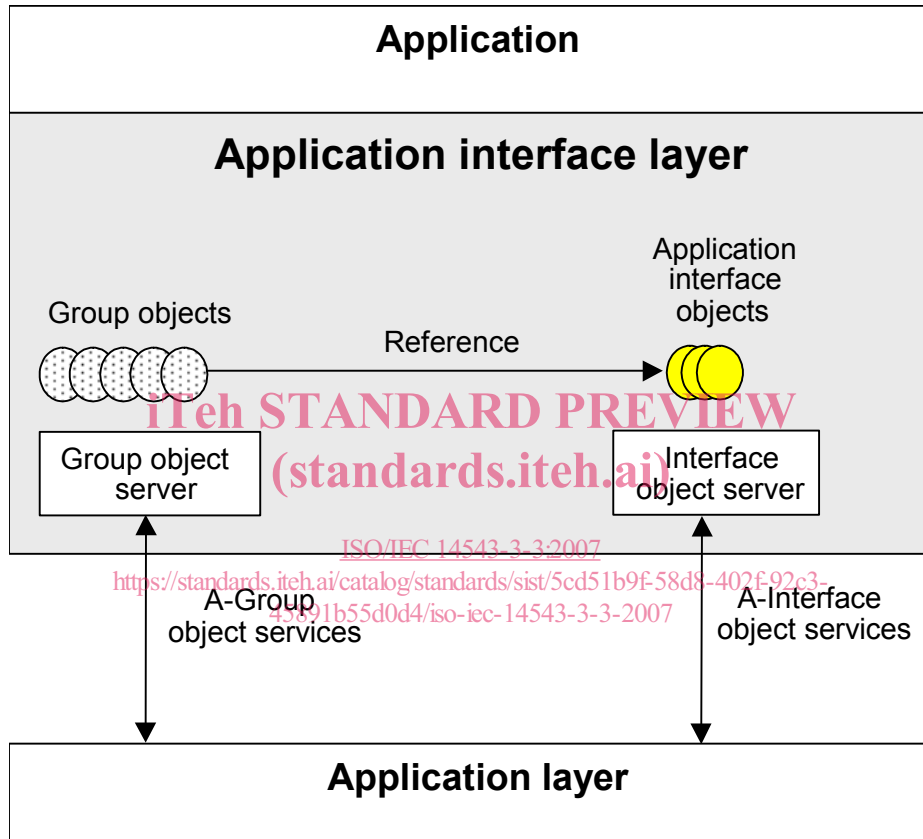An application may use each kind of object at any time; see Figure 1.

Figure 1 – User process model

6   Group object server

6.1   Overview

Group objects can be distributed to a number of devices. Each device may be transmitter and receiver for group object values. More than one group object can exist in an end device and a group object in a device may be assigned to one or more group addresses. Group objects of an end device may belong to the same or to different groups. Each group shall have a network-wide unique group address. The group address shall be mapped to a local group index (TSAP) by the transport layer; the group index shall be unique for the communication services of the device. The application layer shall map the group index by the association table to the group reference ID (Application layer Service Access Point, ASAP) that shall be used to address the group objects.

6.2 General data structure group objects

6.2.1 Structure

In the sense of the previous clause a group object shall consist of three parts as shown in Figure 2:

a) the group object description;

b) the object value;

c) the communication flags.

group object description			communication flags	group object value
object type	transmission priority	configuration flags		

Figure 2 – Data structure of group objects

6.2.2 Group object description

6.2.2.1 Object type

The following value-types shall be possible:

Table 1 – Group object types

Value length / Type	Value-size
Unsigned Integer (1)	1 bit
Unsigned Integer (2)	2 bit
Unsigned Integer (3)	3 bit
Unsigned Integer (4)	4 bit
Unsigned Integer (5)	5 bit
Unsigned Integer (6)	6 bit
Unsigned Integer (7)	7 bit
Unsigned Integer (8)	1 octet
Unsigned Integer (16)	2 octets
Octet (3)	3 octets
Octet (4)	4 octets
Octet (6)	6 octets
Octet (8)	8 octets
Octet (10)	10 octets
Octet (14)	14 octets
Interface object reference	4 to 14 octets

Only group objects of the same type may be linked to one group, and for interface object references the interface object type with the same instance number shall also be the same.

6.2.2.2 Transmission priority

The priority can only be "urgent", "normal" or "low". The transmission priority "system" shall not be allowed for communication using group objects.