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INTERNATIONAL STANDARD

ISO/IEC 15045-1

First edition
2004-01

**Information technology –
Home electronic system (HES) gateway –**

**Part 1:
A residential gateway model for HES**



Reference number
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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) GATEWAY –

Part 1: A residential gateway model for HES

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 through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.
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International Standard ISO/IEC 15045-1 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

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

INTRODUCTION

The residential gateway (RG) is a device of the Home Electronic System (HES) that connects home network domains to network domains outside the house, as shown in Figure 1. It supports communications among devices within the premises and systems, service providers, operators and users outside the premises.

The RG enables service and content providers to deliver services such as entertainment, video and broadband digital streams, monitoring for health care, security and occupancy, home appliance control and preventive maintenance, remote metering, and energy management. The RG specified by this standard does not imply the use of any particular protocol such as IP and it is recognised that many forms of the RG will exist using many types of data such as analogue video and broadband digital streams.

The safe and effective delivery of these services places many demands on the facilities of the RG. These include the integrity and security of communications, the delivery of commands to devices in the home from external sources, the blocking of selected commands that may create unsafe conditions, the protection of the home from the risks inherent in a connection to the internet, and facilitating micro-payments. There may be many different configurations of RG. Regardless of the RG configuration, this standard ensures the interoperability of home devices with external services. Also, this standard specifies features to enhance the safety and security of network devices and consumer transactions via the network.

The RG connects the remote user and the internet with the people, equipment, appliances or services in the home. These devices or systems are usually objects or nodes on a particular Home Area Network (HAN).

Residential gateway

Some of the potential interfaces and supported networks of a residential gateway are shown in Figure 1. In all cases the gateway provides the mechanism whereby Wide Area Networks (WANs) communicate with Home Area Networks. The gateway may be a standalone gateway; it may be embedded in another device; or more than one gateway unit may be used. A number of distributed gateway units may display the behaviour of a single gateway.

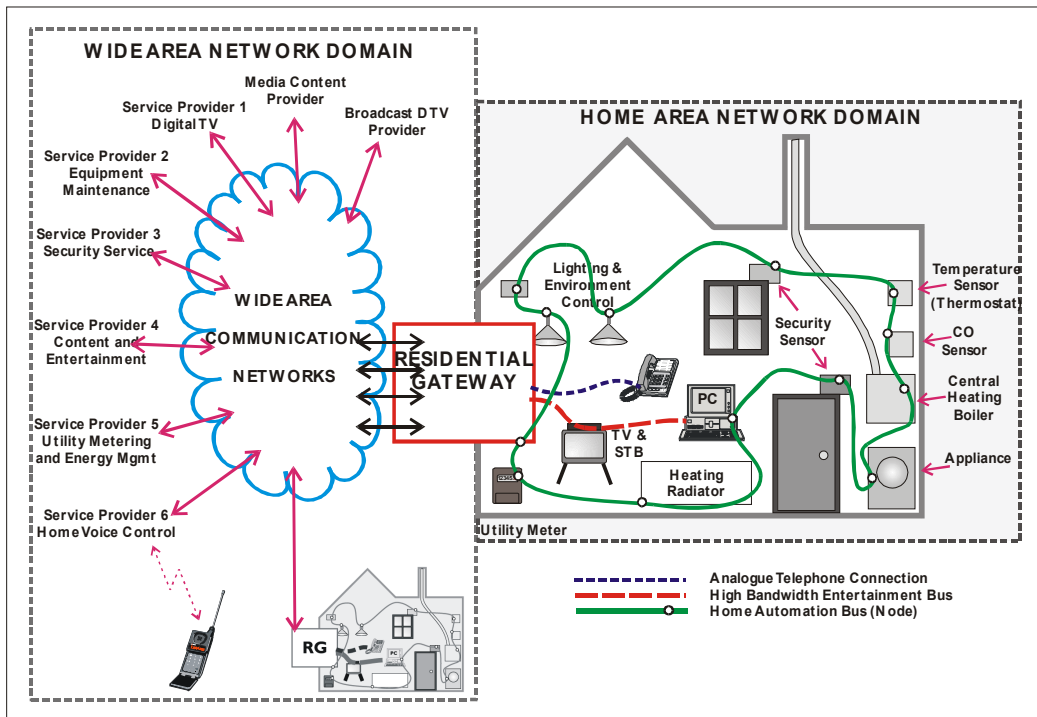


Figure 1 – Typical service provision for home network

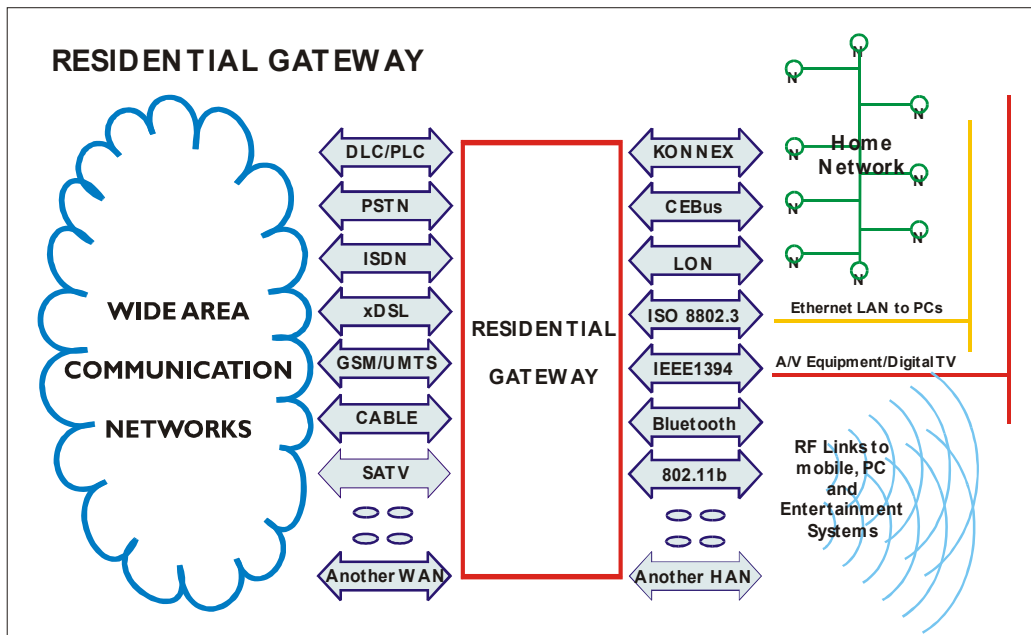


Figure 2 – Diagram of possible RG connections and interfaces

Figure 2 illustrates that multiple WANs and HANs may be supported by the RG. This figure is not intended to imply that all or any of the interfaces or connections shown need to be connected to a residential gateway (or for instance that terrestrial DTV is excluded in favour of SATV).

The physical manifestation of a residential gateway is outside the scope of this standard. This standard accommodates a range of potential configurations. These configurations may range from an approach where a single box acts as interface between two or more WANs and HANs, to a modular dedicated residential gateway, to multiple residential gateways distributed among physically separate locations within the premises.

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This standard is based on a black box approach, since it specifies the interfaces of the RG and the function provided but leaves considerable freedom on how these functions are implemented within the black box¹.

This standard is applicable to all communications and other technologies that may be incorporated in the residential gateway and includes both analogue and digital systems.

This document comprises the following:

- requirements of a residential gateway;
- functional safety requirements of a residential gateway, where these are not covered by existing functional safety standards;
- security requirements of a residential gateway;
- options for the Architecture of the residential gateway and the elements of a conforming residential gateway (see Annex A);
- safety requirements of home systems connected to Wide Area Networks and the role of the residential gateway (see Annex B);
- security requirements of home systems connected to Wide Area Networks and the role of the residential gateway (see Annex C).

This document offers a future-proof², forwards and backwards compatible standard for residential gateways and for networks and devices to which they are interfaced.

¹ In systems terminology a 'black box' refers to an object that has inputs, outputs and carries out functions but for which the means and methodology that convert the inputs into outputs are not specified. Only inputs, outputs and functions are specified.

² A system that is called 'future proof' is expected to be adapted to technologies and meet requirements that were not specified when it was designed but may be needed in future.