

Recommendation

ITU-T J.1611 (11/2022)

SERIES J: Cable networks and transmission of television, sound programme and other multimedia signals

Artificial intelligence (AI) assisted cable networks –
Requirements for the set-top box

Functional requirements for a smart home gateway

Recommendation ITU-T J.1611

Functional requirements for a smart home gateway

Summary

Recommendation ITU-T J.1611 specifies functional requirements for a smart home gateway from both the hardware and software point of view to ensure secure interoperability among consumers, businesses and industries by delivering a standardized communications platform and allowing devices to communicate across operating systems, service providers, transport technologies or ecosystems.

In a smart home solution, a gateway is incorporated to connect various appliances. In addition, a connection management platform based on the Internet of things (IoT) is required to enable various applications. These applicable solutions include home health, entertainment, security and home automation, which promote a safer, happier, as well as a more comfortable and convenient lifestyle.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T J.1611	2021-01-13	9	11.1002/1000/14586
2.0	ITU-T J.1611	2022-10-29	9	11.1002/1000/15118

Keywords

IoT, residential gateway, STB, smart home.

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents/software copyrights, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the appropriate ITU-T databases available via the ITU-T website at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2023

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Table of Contents

	Page
1 Scope	1
2 References.....	1
3 Definitions	1
3.1 Terms defined elsewhere	1
3.2 Terms defined in this Recommendation.....	1
4 Abbreviations and acronyms	2
5 Conventions	3
6 Overview	3
6.1 Overall smart home system	3
6.2 Smart home gateway	3
7 Requirements	4
7.1 Basic hardware capability.....	4
7.2 IoT hardware connectivity.....	5
7.3 Basic software function	6
7.4 Internet of things device management.....	7
7.5 Security.....	7
Bibliography.....	9

Introduction

A smart home is a kind of home automation system based on the Internet of things (IoT), through which home appliances, sensors and services can be connected by a communication network and remotely accessed, monitored and controlled. A smart home gateway, sometimes called a smart home bridge, collects and translates various protocol communications from smart home devices.

In a smart home solution, a gateway is incorporated to connect appropriate appliances. In addition, an IoT-based connection management platform is required to enable various applications. These applicable solutions include home health, entertainment, security, and home automation, which promote a safer, happier, as well as a more comfortable and convenient lifestyle. The solution will help operators to adapt heritage home broadband services to provide intelligent home services and increase subsequent service income revenues.

As such, a gateway acts as the heart of a smart home network, tying together various devices and systems in a centralized platform. This also simplifies the network for users and gives them a single smart home application to manage all systems and applications. Another important function of the gateway is to act as a protocol converter and translator. Considering that there are different wireless access technologies and different protocols and eco-systems, this function will make it possible to have different smart home systems or even different interoperable ecosystems, which will bring great convenience to the customer.

A gateway can be a standalone device in a smart home solution. It can also be incorporated into a set-top box or other residential gateway devices. The common requirement of the solution is that a smart home gateway should have the capabilities of broadband connection with an IoT management platform, and a long life cycle in the home environment.