

---

---

**Information technology — Open  
Connectivity Foundation (OCF)  
Specification —**

**Part 14:  
OCF resource to BLE mapping  
specification**

*Technologies de l'information — Specification de la Fondation pour la  
connectivité ouverte (Fondation OCF) —*

*Partie 14: Spécification du mapping entre ressources OCF et BLE*





**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword .....	v
Introduction .....	vi
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms, definitions, symbols and abbreviated terms .....</b>	<b>2</b>
<b>3.1 Terms and definitions .....</b>	<b>2</b>
<b>3.2 Symbols and abbreviated terms .....</b>	<b>2</b>
<b>4 Document conventions and organization .....</b>	<b>2</b>
<b>4.1 Conventions .....</b>	<b>2</b>
<b>4.2 Notation .....</b>	<b>2</b>
<b>5 Theory of operation .....</b>	<b>3</b>
<b>5.1 Interworking approach .....</b>	<b>3</b>
<b>5.2 Mapping syntax .....</b>	<b>3</b>
<b>6 BLE translation .....</b>	<b>4</b>
<b>6.1 Operational scenarios .....</b>	<b>4</b>
<b>6.1.1 Introduction .....</b>	<b>4</b>
<b>6.1.2 Use case for BLE bridging .....</b>	<b>5</b>
<b>6.2 Requirements specific to BLE bridging function .....</b>	<b>5</b>
<b>6.2.1 General .....</b>	<b>5</b>
<b>6.2.2 Requirements specific to BLE .....</b>	<b>6</b>
<b>6.2.3 Exposing BLE GATT servers to OCF clients .....</b>	<b>6</b>
<b>7 Device type mapping .....</b>	<b>17</b>
<b>7.1 Introduction .....</b>	<b>17</b>
<b>7.2 BLE Profile to OCF device types .....</b>	<b>17</b>
<b>8 BLE profile to resource equivalence .....</b>	<b>18</b>
<b>8.1 Introduction .....</b>	<b>18</b>
<b>8.2 BLE services to OCF resources .....</b>	<b>18</b>
<b>9 Detailed mappings .....</b>	<b>19</b>
<b>9.1 Introduction .....</b>	<b>19</b>
<b>9.2 Blood pressure mapping .....</b>	<b>19</b>
<b>9.2.1 Derived model .....</b>	<b>19</b>
<b>9.2.2 Property definition .....</b>	<b>19</b>
<b>9.2.3 Derived model definition .....</b>	<b>21</b>
<b>9.3 Glucose measurement mapping .....</b>	<b>24</b>
<b>9.3.1 Derived model .....</b>	<b>24</b>
<b>9.3.2 Property definition .....</b>	<b>24</b>
<b>9.3.3 Derived model definition .....</b>	<b>28</b>
<b>9.4 Health thermometer mapping .....</b>	<b>33</b>
<b>9.4.1 Derived model .....</b>	<b>33</b>
<b>9.4.2 Property definition .....</b>	<b>33</b>
<b>9.4.3 Derived model definition .....</b>	<b>34</b>
<b>9.5 Weight scale mapping .....</b>	<b>36</b>
<b>9.5.1 Derived model .....</b>	<b>36</b>
<b>9.5.2 Property definition .....</b>	<b>36</b>
<b>9.5.3 Derived model definition .....</b>	<b>39</b>

<b>Annex A (Informative) BLE GATT based data model .....</b>	<b>43</b>
<b>A.1 BLE GATT based data model &amp; GATT features .....</b>	<b>43</b>
<b>A.1.1 Introduction .....</b>	<b>43</b>
<b>A.1.2 Profile dependency .....</b>	<b>43</b>
<b>A.1.3 Configurations and roles .....</b>	<b>43</b>
<b>A.1.4 GATT profile hierarchy .....</b>	<b>44</b>
<b>Annex B (Informative) Supporting atomic measurement operation in BLE.....</b>	<b>47</b>
<b>B.1 Atomic measurement resource type in OCF.....</b>	<b>47</b>
<b>B.2 Case 1. One characteristic covers all properties of an atomic measurement resource type .....</b>	<b>47</b>
<b>B.3 Case 2. multiple characteristics cover all properties of an atomic measurement resource type .....</b>	<b>48</b>

## Foreword

ISO (the International Organization for Standardization) and IEC (the 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted (see [www.iso.org/directives](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)) or the IEC list of patent declarations received (see [patents.iec.ch](http://patents.iec.ch)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

This document was prepared by the Open Connectivity Foundation (OCF) (as OCF Resource to BLE Mapping, version 2.2.0) and drafted in accordance with its editorial rules. It was adopted, under the JTC 1 PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

A list of all parts in the ISO/IEC 30118 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

## Introduction

This document, and all the other parts associated with this document, were developed in response to worldwide demand for smart home focused Internet of Things (IoT) devices, such as appliances, door locks, security cameras, sensors, and actuators; these to be modelled and securely controlled, locally and remotely, over an IP network.

While some inter-device communication existed, no universal language had been developed for the IoT. Device makers instead had to choose between disparate frameworks, limiting their market share, or developing across multiple ecosystems, increasing their costs. The burden then falls on end users to determine whether the products they want are compatible with the ecosystem they bought into, or find ways to integrate their devices into their network, and try to solve interoperability issues on their own.

In addition to the smart home, IoT deployments in commercial environments are hampered by a lack of security. This issue can be avoided by having a secure IoT communication framework, which this standard solves.

The goal of these documents is then to connect the next 25 billion devices for the IoT, providing secure and reliable device discovery and connectivity across multiple OSs and platforms. There are multiple proposals and forums driving different approaches, but no single solution addresses the majority of key requirements. This document and the associated parts enable industry consolidation around a common, secure, interoperable approach.

ISO/IEC 30118 consists of eighteen parts, under the general title Information technology — Open Connectivity Foundation (OCF) Specification. The parts fall into logical groupings as described herein:

- Core framework
  - Part 1: Core Specification
  - Part 2: Security Specification
  - Part 13: Onboarding Tool Specification
- Bridging framework and bridges
  - Part 3: Bridging Specification
  - Part 6: Resource to Alljoyn Interface Mapping Specification
  - Part 8: OCF Resource to oneM2M Resource Mapping Specification
  - Part 14: OCF Resource to BLE Mapping Specification
  - Part 15: OCF Resource to EnOcean Mapping Specification
  - Part 16: OCF Resource to UPlus Mapping Specification
  - Part 17: OCF Resource to Zigbee Cluster Mapping Specification
  - Part 18: OCF Resource to Z-Wave Mapping Specification
- Resource and Device models
  - Part 4: Resource Type Specification
  - Part 5: Device Specification

- Core framework extensions
  - Part 7: Wi-Fi Easy Setup Specification
  - Part 9: Core Optional Specification
- OCF Cloud
  - Part 10: Cloud API for Cloud Services Specification
  - Part 11: Device to Cloud Services Specification
  - Part 12: Cloud Security Specification





# Information technology — Open Connectivity Foundation (OCF) Specification —

## Part 14: OCF resource to BLE mapping specification

### 1 Scope

This document provides detailed mapping information between BLE (Bluetooth Low Energy) and OCF defined Resources.

### 2 Normative references

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.

Adopted Bluetooth Profiles, Services, Protocols and Transports  
<https://www.bluetooth.com/specifications/adopted-specifications>

Bluetooth Core Specification 4.0  
<https://www.bluetooth.com/specifications/bluetooth-core-specification>

ISO/IEC 30118-1 Information technology -- Open Connectivity Foundation (OCF) Specification -- Part 1: Core specification  
<https://www.iso.org/standard/53238.html>  
Latest version available at: [https://openconnectivity.org/specs/OCF\\_Core\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Core_Specification.pdf)

ISO/IEC 30118-2 Information technology – Open Connectivity Foundation (OCF) Specification – Part 2: Security specification  
<https://www.iso.org/standard/74239.html>  
Latest version available at: [https://openconnectivity.org/specs/OCF\\_Security\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Security_Specification.pdf)

ISO/IEC 30118-3 Information technology – Open Connectivity Foundation (OCF) Specification – Part 3: Bridging specification  
<https://www.iso.org/standard/74240.html>  
Latest version available at: [https://openconnectivity.org/specs/OCF\\_Bridging\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Bridging_Specification.pdf)

ISO/IEC 30118-4 Information technology – Open Connectivity Foundation (OCF) Specification – Part 4: Resource Type specification  
<https://www.iso.org/standard/74241.html>  
Latest version available at: [https://openconnectivity.org/specs/OCF\\_Resource\\_Type\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Resource_Type_Specification.pdf)

ISO/IEC 30118-5 Information technology – Open Connectivity Foundation (OCF) Specification – Part 5: Device specification  
<https://www.iso.org/standard/79389.html>  
Latest version available at: [https://openconnectivity.org/specs/OCF\\_Device\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Device_Specification.pdf)

## **ISO/IEC 30118-14:2021(E)**

Derived Models for Interoperability between IoT Ecosystems, Stevens & Merriam, March 2016  
[https://www.iab.org/wp-content/IAB-uploads/2016/03/OCF-Derived-Models-for-Interoperability-Between-IoT-Ecosystems\\_v2-examples.pdf](https://www.iab.org/wp-content/IAB-uploads/2016/03/OCF-Derived-Models-for-Interoperability-Between-IoT-Ecosystems_v2-examples.pdf)

IETF RFC 4122, *A Universally Unique Identifier (UUID) URN Namespace*, July 2005  
<https://www.rfc-editor.org/info/rfc4122>