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

**Part 10:
Cloud API for cloud services
specification**

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

Partie 10: Spécification API nuage pour les services en nuage

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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 or 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) or the IEC list of patent declarations received (see 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. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by the Open Connectivity Foundation (OCF) (as OCF Cloud Open API for Cloud Services Specification, 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 and 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 10: Cloud API for cloud services specification

1 Scope

This document defines functional requirements for the OCF Cloud to Cloud Application Programming Interface (API).

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.

IETF RFC 2818, *HTTP over TLS*, May 2000
<https://tools.ietf.org/html/rfc2818>

IETF RFC 5646, *Tags for Identifying Languages*, September 2009
<https://www.rfc-editor.org/info/rfc5646>

IETF RFC 6749, *The OAuth 2.0 Authorization Framework*, October 2012
<https://tools.ietf.org/html/rfc6749>

IETF RFC 6750, *The OAuth 2.0 Authorization Framework: Bearer Token Usage*, October 2012
<https://www.rfc-editor.org/info/rfc6750>

IETF RFC 7628, *A Set of Simple Authentication and Security Layer (SASL) Mechanisms for OAuth*, August 2015
<https://www.rfc-editor.org/info/rfc7628>

ISO/IEC 17788 *Information technology – Cloud computing – Overview and vocabulary*
<https://www.iso.org/standard/60544.html>

ISO/IEC 17789 *Information technology – Cloud computing – Reference architecture*
<https://www.iso.org/standard/60545.html>

ISO/IEC 30118-1, Information technology -- Open Connectivity Foundation (OCF) Specification -- Part 1: Core specification
<https://www.iso.org/standard/53238.html>

ISO/IEC 30118-2, Information technology -- Open Connectivity Foundation (OCF) Specification -- Part 2: Security specification
<https://www.iso.org/standard/74239.html>

OCF Cloud Security, *Open Connectivity Foundation Cloud Security, Version 2.2.0*

Available at: https://openconnectivity.org/specs/OCF_Cloud_Security_Specification_v2.2.0.pdf

OCF Device to Cloud Services, *Open Connectivity Foundation Device to Cloud Services Specification, Version 2.2.0*

Available at:

https://openconnectivity.org/specs/OCF_Device_To_Cloud_Services_Specification_v2.2.0.pdf

OCF Cloud API for Cloud Services

<https://github.com/openconnectivityfoundation/core-extensions/blob/ocfcloud-openapi/swagger2.0/oic.r.cloudopenapi.swagger.json>

OpenAPI 2.0, *fka Swagger RESTful API Documentation Specification, Version 2.0*

<https://github.com/OAI/OpenAPI-Specification/blob/master/versions/2.0.md>

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 30118-1, ISO/IEC 30118-2, OCF Device to Cloud Services and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1.1

API Endpoint

defined URL to which requests defined in this document are sent

3.1.2

Bearer Token

OAuth2.0 access token as defined within IETF RFC 6750

3.1.3

Origin Cloud

OCF Cloud through which the user works with his OCF Devices

3.1.4

Subscription ID

unique identity that is associated with an instance of a subscription to an event (or events)

3.1.5

Target Cloud

OCF Cloud to which OCF Servers (OCF Devices) are connected which the user wants to control via the *Origin Cloud* (3.1.2)

3.2 Symbols and abbreviated terms

API Application Programming Interface

HMAC Hash-based Message Authentication Code