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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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Contents

Page

Foreword vi
Introduction vii
1 Scope 1
2 Normative references 1
3 Terms, definitions and abbreviated terms 2
3.1 Terms and definitions 2
3.2 Symbols and abbreviated terms 2
4 Document conventions and organization 3
4.1 Conventions 3
4.2 Notation 3
5 Overview 4
5.1 Introduction 4
5.2 OCF Cloud architecture alignment with ISO IEC 17789 5
5.3 General OCF Cloud API for Cloud Services elements 5
5.4 Cloud to Cloud operational overview 6
5.4.1 Introduction 6
5.4.2 Conceptual architecture 6
5.4.3 Authorizing OCF Cloud connectivity 6
5.4.4 Synchronization of user's set of Devices 7
5.4.5 Keeping up-to-date: Notifications of changes on other OCF Clouds 7
5.4.6 Handling of requests and responses for connected Devices 7
6 Authentication and authorization 7
7 Account linking API 8
7.1 General 8
7.2 OAuth2.0 access token scopes 9
8 Devices API 10
8.1 Introduction 10
8.2 Parameters supported in Requests 10
8.3 Retrieve all Devices 11
8.3.1 Summary 11
8.3.2 Request and response payload 12
8.3.3 Responses 13
8.4 Retrieve one Device 13
8.4.1 Summary 13
8.4.2 Request and response payload 14
8.4.3 Responses 14
8.5 Retrieve specific Resource 15
8.5.1 Summary 15
8.5.2 Request and response payload 15
8.5.3 Responses 16
8.6 Update a Resource on a Device 16
8.6.1 Summary 16
8.6.2 Request and response payload 17
8.6.3 Responses 17

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9 Events API 18
9.1 Introduction 18
9.2 Events authentication 19
9.2.1 Introduction 19
9.2.2 Create event signature 19
9.2.1 Verify the event signature 19
9.3 Parameters supported 20
9.4 Events API subscription and notification payload definitions 20
9.4.1 Subscription request 20
9.4.2 Subscription response 21
9.4.3 Notification request 22
9.4.4 Notification response 24
9.5 Subscribe and unsubscribe to devices level event types 24
9.5.1 Summary 24
9.5.2 Request and response payload 25
9.5.3 Responses 25
9.6 Subscribe and unsubscribe to device level events 25
9.6.1 Summary 25
9.6.2 Request and response payload 26
9.6.3 Responses 26
9.7 Subscribe and unsubscribe to resource level events 27
9.7.1 Summary 27
9.7.2 Request and response payload 27
9.7.3 Responses 28
9.8 Notification of devices level events 28
9.8.1 Summary 28
9.8.2 Request and response payload 29
9.8.3 Responses 29
9.9 Notification of Device level events 29
9.9.1 Summary 29
9.9.2 Request and response payload 30
9.9.3 Responses 30
9.10 Notification of Resource level events 30
9.10.1 Summary 30
9.10.2 Request and response payload 31
9.10.3 Responses 31
Annex A Representative flows 32
A.1 Introduction 32
A.2 OAuth2.0 application registration 32
A.3 Account linking 32
A.4 Retrieval of all Devices 33
A.4.1 Summary 33
A.4.2 Flow 33
A.4.3 Flow description 34
A.5 Retrieval of a single Device 34
A.5.1 Summary 34
A.5.2 Flow 34
A.5.3 Flow description 35

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A.6 Retrieval of a single Resource 35
A.6.1 Summary 35
A.6.2 Flows 35
A.7 Update of a single Resource 37
A.7.1 Summary 37
A.7.2 Flows 37
A.8 Establishment of new subscription request 38
A.8.1 Summary 38
A.8.2 Flows 38
A.9 Event generated for a subscription 39
A.9.1 Summary 39
A.9.2 Flows 39
A.10 Addition of new registration 40
A.10.1 Summary 40
A.10.2 Flows 40
A.11 Removal of existing device registration 40
A.11.1 Summary 40
A.11.2 Flows 40
Annex B Open API Definition 42
B.1 OCF Cloud API for Cloud Services 42
B.1.1 Supported APIs 42
B.1.2 OpenAPI 2.0 definition 43

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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.

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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

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- 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

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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

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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

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