
**Information technology — Cloud
computing — Cloud services and
devices: Data flow, data categories and
data use**

*Technologies de l'information — Informatique en nuage — Services
et dispositifs en nuage : Débits, catégories et utilisation des données*

This document is a preview generated by EBS



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, 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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviated terms	4
5 Structure of this document	5
6 Overview of devices and cloud services ecosystems	5
6.1 Background and context — Impact of devices and personalized cloud services	5
6.2 Ecosystem of devices and cloud services	6
6.3 Devices and multiple user sub-roles	7
6.3.1 General	7
6.3.2 Bring your own device (BYOD)	8
7 Extending the CCRA to the devices and cloud services ecosystem	9
7.1 Overview	9
7.2 Personal and organizational environments	9
7.3 Device impact on the CCRA: User view	10
7.3.1 Cloud service provider	10
7.3.2 Cloud service customer	11
7.4 Device impact on the CCRA: Functional view	11
7.4.1 General	11
7.4.2 Functional components in the functional view	12
7.4.3 Functional view: Data flows	14
8 Data taxonomy	16
8.1 Overview	16
8.2 Data categories	16
8.2.1 General	16
8.2.2 Customer content data	17
8.2.3 Derived data	18
8.2.4 Cloud service provider data	21
8.2.5 Account data	21
8.3 Data identification qualifiers	21
8.3.1 General	21
8.3.2 Identified data	22
8.3.3 Pseudonymized data	22
8.3.4 Unlinked pseudonymized data	22
8.3.5 Anonymized data	22
8.3.6 Aggregated data	22
9 Data processing and use categories	22
9.1 Overview	22
9.2 Data processing categories	23
9.2.1 General	23
9.2.2 Data partitioning	23
9.2.3 Data integration	23
9.2.4 Data fusion	24
9.2.5 Data improvement	24
9.2.6 Encryption	24
9.2.7 Replication	24
9.2.8 Data Deletion	24
9.2.9 Re-identification	25
9.3 Data use categories	25

9.3.1	General.....	25
9.3.2	Provide.....	26
9.3.3	Improve.....	26
9.3.4	Personalize.....	27
9.3.5	Offer upgrades or upsell.....	27
9.3.6	Market/advertise/promote.....	27
9.3.7	Share.....	28
9.4	Scopes: Boundaries of collection and use of data.....	29
9.4.1	Scope concepts.....	29
9.4.2	Scope types.....	29
10	Data use statements.....	31
10.1	Overview.....	31
10.2	Data use statement structure.....	32
10.2.1	Structure definition.....	32
10.2.2	Describing the scope of applications and cloud services that apply to use statements.....	34
10.2.3	Assumptions about when data is collected and used.....	35
10.2.4	Defining promotion targets.....	35
10.2.5	Data types.....	35
10.2.6	Data qualifiers for data types.....	36
10.2.7	Examples of statements about data flow in the devices and cloud services ecosystem.....	37
10.2.8	Exceptional use statements.....	38
Annex A (informative) Diagrams of data categories and data identification qualifiers.....		41
Bibliography.....		42

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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 38, *Cloud computing and distributed platforms*.

Introduction

Objective and target audience

This document provides a description of the ecosystem of devices and cloud services and the related flows of data between cloud services, cloud service customers, cloud service users and their devices. These are necessary to provide guidance about how data is used on the devices in the context of the cloud computing ecosystem and the associated location and identity issues that emerge from such use.

This document proposes a scheme for the structure of data use statements that can be used by cloud service providers to help cloud service customers understand and protect the privacy and confidentiality of their data and their users' data through increased transparency of policies and practices.

This document can be used in several ways including, but not limited to, the following:

- a) by cloud service providers and application developers to guide them in describing what they intend to do with data in their designs, so as to simplify privacy and data use reviews and to communicate this information to non-technical departments such as internal compliance, marketing and legal teams;
- b) by organizations drawing up data use statements as part of drafting cloud service agreements and application contracts, privacy statements, etc., which could apply to documents internal to an organization, in addition to public or legal documents;
- c) by government regulators and agencies to advise on suitable ways of describing data flow and use;
- d) by those preparing information on data flow and data use for communication to the press and the public.

This document is descriptive and not prescriptive. It cannot be used for compliance directly. Instead, it provides a set of concepts and definitions, including a data taxonomy and data use statement structure, that can be used for transparency about how data is used in an ecosystem of devices and cloud services.

Providing a clear description of data flows

This document aims to improve the understanding of the data flows that take place in an ecosystem consisting of devices accessing cloud services. It does this through an extended cloud computing reference architecture (CCRA) (based on the architecture described in ISO/IEC 17789) that describes the impact of devices on cloud service ecosystems and the impact of cloud services on devices. It also describes the data flows that take place within the extended reference architecture.

Providing transparency to all stakeholders

To maintain a relationship of trust between the stakeholders of the ecosystem of devices and cloud services and also to meet the demands of laws and regulations, it is necessary for the device platform providers and the cloud service providers to be transparent about how they make use of the various data types that flow within the ecosystem.

There is a particular need to provide simple and clear statements to end users about what is done with data that relates to them. The data may be personally identifiable information (PII) and may be sensitive, in other words, this can be a privacy issue. Cloud service customers are likely to be concerned about how their data is used, even when the customer is an organization rather than an individual. The cloud service customer may be a data controller, holding personal data about their employees or their customers; in such a role, the cloud service customer has obligations relating to the processing of that data.

To assist cloud service providers and device platform providers in being transparent about their use of data, this document defines a simple language for making statements about data use, which can be used to create clear notification to end users and other interested parties.

Information technology — Cloud computing — Cloud services and devices: Data flow, data categories and data use

1 Scope

This document

- extends the existing cloud computing vocabulary and reference architecture in ISO/IEC 17788 and ISO/IEC 17789 to describe an ecosystem involving devices using cloud services,
- describes the various types of data flowing within the devices and cloud computing ecosystem,
- describes the impact of connected devices on the data that flow within the cloud computing ecosystem,
- describes flows of data between cloud services, cloud service customers and cloud service users,
- provides foundational concepts, including a data taxonomy, and
- identifies the categories of data that flow across the cloud service customer devices and cloud services.

This document is applicable primarily to cloud service providers, cloud service customers and cloud service users, but also to any person or organization involved in legal, policy, technical or other implications of data flows between devices and cloud services.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

cloud service

one or more capabilities offered through cloud computing invoked using a defined interface

[SOURCE: ISO/IEC 17788:2014, 3.2.8]

3.2

cloud service customer

party which is in a business relationship for the purpose of using *cloud services* (3.1)

Note 1 to entry: A business relationship does not necessarily imply financial agreements.

[SOURCE: ISO/IEC 17788:2014, 3.2.11]