INTERNATIONAL STANDARD

ISO/IEC 20933

Second edition
2019-01

Information technology — Distributed application platforms and services (DAPS) — Framework for distributed real-time access systems

Technologies de l'information — Services et plate-formes d'application distribuées — Structure pour les contrôles d'accès diffusés en temps réel

Reference number
ISO/IEC 20933:2019(E)

© ISO/IEC 2019



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2019

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
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions and acronyms ... **1**
4 Conformance ... **3**
5 Overview ... **3**
6 Transaction ... **4**
7 Time stamping function ... **6**
8 Module ... **6**
8.1 Policy module ... 6
8.2 Access-point module ... 7
8.3 RED module ... 7
8.4 Processing module ... 7
8.5 Storage module ... 7
9 Messages of each interface ... **7**
9.1 Messages of Policy interface ... 8
9.2 Message of Access interface ... 8
9.3 Messages of Processing interface ... 9
9.4 Messages of Storage interface ... 11
10 Messages of external interfaces ... **13**
10.1 Access request from external interface (In) ... 13
10.2 Final result notification to external interface (Out) ... 13
10.3 Time stamp notification ... 14
11 Access system performance management ... **14**
11.1 Transaction processing time ... 15
11.2 Request performance time ... 15
11.3 Module processing time ... 16
11.4 Data transmission time ... 17
11.5 Request performance time for retrieve ... 17
11.6 Module processing time for retrieve ... 17
11.7 Data transmission time for retrieve ... 18
11.8 Request performance time for store ... 18
11.9 Module processing time for store ... 19
11.10 Data transmission time for store ... 19
11.11 Access point processing time ... 19
Annex A (informative) **Service access control system** ... **21**
Annex B (informative) **Share information between different Access systems** ... **22**
Annex C (informative) **Usage of time stamping** ... **23**
Annex D (informative) **List of messages** ... **26**

© ISO/IEC 2019 – All rights reserved

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).

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 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.

This document was prepared by Ecma International (as ECMA-412) and drafted in accordance with its editorial rules. It was assigned to Joint Technical Committee ISO/IEC JTC 1, *Information technology*, and adopted under the "fast-track procedure".

This second edition cancels and replaces the first edition (ISO/IEC 20933:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

— added new functionalities on performance management mechanisms;

— editorial improvements and clarifications to the text of the document.

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.

© ISO/IEC 2019 – All rights reserved

Introduction

Technology for real-time access control is widely used in many situations such as entrance gates of facilities and service access control systems. Membership and settlement services also benefit from real-time access control systems connected via networks and using database information.

Sophisticated cloud, virtualisation, database, networking technology and services and the evolution of authentication technology such as biometrics, NFC, QR codes used in distributed and modular access control systems enable previously underserved users and operators to innovate around new use cases.

Taking into account the many technologies, this document specifies the reference model and common control functions. It gives direction for ongoing innovation and development of technology and system integration of distributed real-time access control system.

This 2nd edition of the Standard introduces new functionalities on performance management mechanisms. Performance management mechanisms allow an Access system to be evaluated for performance by using specific elements and metrics. This edition also provides a number of editorial improvements and clarifications to the text of the Standard.

NOTE In the 1st edition the title of the Standard was Access systems.

© ISO/IEC 2019 – All rights reserved

Information technology — Distributed application platforms and services (DAPS) — Framework for distributed real-time access systems

1 Scope

This document specifies a framework for a distributed real-time Access system. It includes:

1) an ID triggered modular system architecture, the functions of the modules, the semantics of messages those modules exchange, and elements of messages;

2) the system behaviour from the time it receives an access request until the time it sends the result along with the sequence;

3) performance measurement mechanisms using a time stamping function that can be employed for the evaluation of the system.

2 Normative references

There are no normative references in this document.

3 Terms and definitions and acronyms

For the purposes of this document, the following terms, definitions and acronyms 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 https://www.iso.org/obp

3.1
Accessor
someone or something that interacts with the Access system

3.2
access-ID
identifier in an Access request

3.3
access-ID-obtained-time
time when an Access-point module obtains an access-ID

3.4
access-point-ID
identifier of an Access-point module

3.5
Access-request
request trigger of processing for access system

© ISO/IEC 2019 – All rights reserved

3.6
Distributed real-time access system
data processing system distributed in the network which is activated by an access request and completed when the processing result accepts or denies that request within a reasonable period of time

3.7
Final-Result-Notification
notification of the final result of a transaction

3.8
function-ID
identifier of function

3.9
Policy-getter
message to request the Policy module to set the rules

3.10
Policy-setter
message to set the rules to the RED module

3.11
Processing-request
request to execute a function

3.12
Processing-response
response to a Processing-request

3.13
RED
Rule Evaluation and Dispatching

3.14
receivedTime
time when a module receives a request from another module

3.15
Retrieve-request
request to retrieve data from storage

3.16
Retrieve-response
response to a Retrieve-request

3.17
rule-ID
identifier of rules

3.18
sendingTime
time when a module sends a response or a Transaction-start-request to another module

3.19
Store-request
request to store data to storage

3.20
Store-response
response to a Store-request

© ISO/IEC 2019 – All rights reserved

3.21
Time-stamp-Notification
notification to provide time stamp information

3.22
transaction-ID
identifier of a transaction

3.23
Transaction-start-request
request to initiate a transaction

4 Conformance

Conformant Access systems progress transactions by interpreting the applicable rules. Conformant modules implement the requests on their interfaces, the corresponding responses and time stamping as specified herein.

5 Overview

This clause is an overview of the system model and the functions of a distributed real-time Access system.

The Access system consists of 5 modules "Access-point, Policy, Processing, RED and Storage" and 4 interfaces "Access-interface, Policy-interface, Processing-interface and Storage-interface". There are also 2 external interfaces "In" and "Out".

The Access system model is shown in Figure 1.

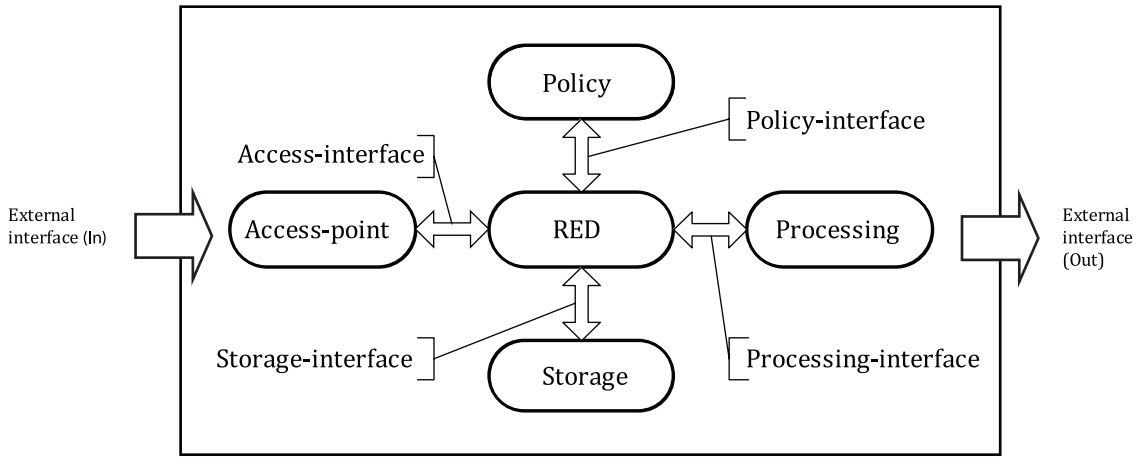


Figure 1 — Access system model

The Access system starts a transaction triggered by an Access ID which is included in Access request from the Accessor through the external interface (In). After the necessary process, the Access system completes the transaction by sending the final result to the receiver through the other external interface (Out).

The Access system has a mechanism, the time stamp function, to measure processing time for the evaluation of the Access system performance.

© ISO/IEC 2019 – All rights reserved