

First edition
2018-12

AMENDMENT 1
2023-01

**Cloud computing — Service level
agreement (SLA) framework —**

Part 2:
Metric model

AMENDMENT 1

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 19086-2:2018/Amd 1:2023



Reference number
ISO/IEC 19086-2:2018/Amd. 1:2023(E)

© ISO/IEC 2023



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2023

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
Website: www.iso.org

Published in Switzerland

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. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (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 <https://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 Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 38, *Cloud computing and distributed platforms*.

A list of all parts in the ISO/IEC 19086 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.

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 19086-2:2018/Amd 1:2023

Cloud computing — Service level agreement (SLA) framework —

Part 2: Metric model

AMENDMENT 1

8.1.5, second paragraph

Add a new second paragraph between the existing first and second paragraphs:

Any metric element (Metric, Expression, Rule, Parameter) may be used by more than one metric if it is defined using a unique id within the set of metrics it is used in. Any metric elements (Metric, Expression, Rule, Parameter) can reference other elements. Element shall be referenced by their ids. Within the context of the referencing element, ids used shall be unique.

Table 1

Replace Table 1 with the following table:

Table 1 — Metric details

Class Name	Metric		
Description	Information about the metric		
Attribute -or- Element	Type	Multiplicity	Definition
id	string	1	an identifier for the metric, unique within the context of usage of the metric
description	string	0..*	a description of the metric that may be provided for multiple languages.
source	string	1	the individual or organization who created the metric
scale	enumeratedList	1	classification of the type of measurement result when using the metric. The value of <i>scale</i> shall be “nominal, ordinal, interval, or ratio”. SLOs shall use either the “interval” or “ratio” scale. SQOs shall use the “nominal” or “ordinal” scales.
category	string	0..1	a grouping of metrics related to each other
expression	Expression	1	The expression of the calculation of the metric. It shall be written using the appropriate id to represent an underlying Metric, parameter, or rule.

Table 1 (continued)

parameter	Parameter	0..*	a parameter is used to define a constant (at runtime) needed in a metric expression or rule. A parameter's value is determined before the metric is used in a measurement. A parameter may be used by more than one metric if it is defined using a unique id within the set of metrics it is used in.
note	string	0..*	additional information about the metric and how to use it.
rule	Rule	0..*	a rule is used to constrain a metric and indicate possible method(s) for measurement.
underlyingMetric	Metric	0..*	a metric element that is used within an expression to define a variable. The expression shall use the underlyingMetric id to reference the underlyingMetric within the expression.
underlyingExpression	Expression	0..*	A supporting expression that is used within an expression, parameter, or rule.

Table 2

Replace Table 2 with the following table:

Table 2 — Expression details

Class Name	Expression		
Description	The expression of the calculation of the metric and supporting information		
Attribute -or- Element	Type	Multiplicity	Definition
id	string	1	an identifier for the expression, unique within the context of usage of the expression
description	string	0..*	a description of the expression
expressionStatement	string	1	the expression statement written using the ids to represent underlyingMetrics, parameters, and rules.
expressionLanguage	string	1	the language used to express the metric (i.e. ISO80000)
unit	string	0..1 required when scale is ratio or interval	real scalar quantity, defined and adopted by convention, with which any other quantity of the same kind can be compared to express the ratio of the two quantities as a number.
note	string	0..*	additional information about the expression

Table 3

Replace Table 3 with the following table:

Table 3 — Parameter details

Class Name	Parameter		
Description	A parameter is used to define a constant (at runtime) needed in a metric expression or rule. A parameter may be used by more than one metric if it is defined using a unique id within the set of metrics it is used in.		
Attribute -or- Element	Type	Multiplicity	Definition
id	string	1	an identifier for the parameter, unique within the context of usage of the parameter
description	string	0..*	a description of the parameter
parameterStatement	string	1	the statement or value of the parameter
unit	string	1	the unit of the parameter
note	string	0..*	additional information about the parameter

Table 4

Replace Table 4 with the following table:

Table 4 — Rule details

Class Name	Rule		
Description	A rule is used to constrain a metric and indicate possible method(s) for measurement. For instance an “AvailabilityDuringBusinessHour” metric could be defined with a scope that constrains some piece of a generic “availability” metric element that limits the measurement period to defined business hours. A rule describes constraints on the metric expression. A constraint can be expressed in many different formats (e.g. plain English, ISO 80000, SBVR)		
Attribute -or- Element	Type	Multiplicity	Definition
id	string	1	an identifier for the rule, unique within the context of usage of the rule
description	string	0..*	a description of the rule
ruleStatement	string	1	a constraint on the metric
ruleLanguage	string	1	the language used to express the rule in the ruleStatement
note	string	0..*	additional information about the rule

C.1.2, Metric (M_AVL_002) table

Replace the text in the second row, second column with:

Cloud Service Availability

Metric (M_TQD_001) table

Replace the text in the second row, second column with:

Total Qualified Downtime

Metric (M_QDT_001) table

Replace the text in the second row second column with:

Qualified Down time

C.1.3,

Replace with:

The following code represents the availability example described in C.1.1 using XML notation instead of tables to represent the metric.

```
<?xml version="1.0" encoding="UTF-8"?>
<Metrics xmlns=https://standards.iso.org/iso-iec/19086/-2/ed-1/en
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Metric description="Cloud Service Availability"
    source="example" id="M_AVL_002" scale="RATIO">
    <Parameter id="P_001" parameterStatement="2.592 x10^6" unit="second"
      note="Parameter represents a 30 day billing cycle in seconds"/>
    <Expression id="E_001" expressionStatement="100 x (P_001- M_TQD_001)/P_001"
      expressionLanguage="ISO80000" unit="percentage"/>
    <UnderlyingMetricRef refid="M_TQD_001"/>
  </Metric>
  <Metric description="Total Qualified Downtime" source="example" id="M_TQD_001"
    scale="RATIO" >
    <Expression id="E_001" expressionStatement="&#x3A3; (M_QDT_001) "
      expressionLanguage="ISO80000" unit="second"/>
    <UnderlyingMetricRef refid="M_QDT_001"/>
  </Metric>
  <Metric description="Qualified Down Time" source="example" id="M_QDT_001"
    scale="RATIO" >
    <Rule id="R_001" ruleLanguage="English" xml:lang="en"
      ruleStatement="The time duration starts when it is observed that the cloud
        service is unavailable and ends when the cloud service is observed to be not unavailable
        according to rule R_002, R_003, R_004"/>
    <Rule id="R_002" ruleLanguage="English" xml:lang="en" ruleStatement="The cloud
        service provides no response"/>
    <Rule id="R_003" ruleLanguage="English" xml:lang="en"
      ruleStatement="the cloud service returns a server error response to a valid
        user request during two or more consecutive one minute intervals"/>
    <Rule id="R_004" ruleLanguage="English" xml:lang="en"
      ruleStatement="the cloud service fails to deliver an average download time for
        a reference document of one second or less. Unavailability due to scheduled maintenance
        is excluded from these conditions and does not contribute towards unavailability
        calculations."/>
    <Expression id="E_001" expressionStatement="&#x394; (t) "
      expressionLanguage="ISO80000" unit="second"/>
  </Metric>
</Metrics>
```