

INTERNATIONAL STANDARD

NORME INTERNATIONALE



OPC unified architecture –
Part 7: Profiles

ITih STANDARD PREVIEW
(standards.iteh.ai)

Architecture unifiée OPC –
Partie 7: Profils

<https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015>
[IEC 62541-7:2015](https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015)



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2015 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 60 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 60 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



OPC unified architecture –
Part 7: Profiles

STANDARD PREVIEW
(standards.iteh.ai)

Architecture unifiée OPC –
Partie 7: Profils

<https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015>
IEC 62541-7:2015

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 25.040.40; 35.100

ISBN 978-2-8322-2372-7

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	10
1 Scope.....	12
2 Normative references	12
3 Terms, definitions, and conventions.....	13
3.1 Terms and definitions.....	13
3.2 Abbreviations.....	14
4 Overview	14
4.1 General.....	14
4.2 ConformanceUnit	15
4.3 Profiles	15
4.4 Profile Categories	16
5 ConformanceUnits	16
5.1 Overview.....	16
5.2 Services.....	17
5.3 Transport and communication related features.....	28
5.4 Information Model and AddressSpace related features.....	36
5.5 Miscellaneous	55
6 Profiles.....	56
6.1 Overview.....	56
6.2 Profile list	56
6.3 Conventions for Profile definitions.....	62
6.4 Applications	62
6.5 Profile tables.....	64
6.5.1 Introduction	64
6.5.2 Core Server Facet	64
6.5.3 Base Server Behaviour Facet	65
6.5.4 Attribute WriteMask Server Facet	65
6.5.5 File Access Server Facet.....	66
6.5.6 Documentation Server Facet	66
6.5.7 Embedded DataChange Subscription Server Facet.....	66
6.5.8 Standard DataChange Subscription Server Facet	67
6.5.9 Enhanced DataChange Subscription Server Facet.....	67
6.5.10 Data Access Server Facet	68
6.5.11 ComplexType Server Facet.....	68
6.5.12 Standard Event Subscription Server Facet.....	68
6.5.13 Address Space Notifier Server Facet	69
6.5.14 A & C Base Condition Server Facet	69
6.5.15 A & C Address Space Instance Server Facet	70
6.5.16 A & C Enable Server Facet.....	70
6.5.17 A & C Alarm Server Facet.....	70
6.5.18 A & C Acknowledgeable Alarm Server Facet.....	70
6.5.19 A & C Exclusive Alarming Server Facet	71
6.5.20 A & C Non-Exclusive Alarming Server Facet.....	71
6.5.21 A & C Previous Instances Server Facet	71
6.5.22 A & C Dialog Server Facet.....	72
6.5.23 A & E Wrapper Facet.....	72

iTech STANDARD PREVIEW

(standards.iteh.ai)

IEC 62541-7:2015

https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015

6.5.24	Method Server Facet	73
6.5.25	Auditing Server Facet	73
6.5.26	Node Management Server Facet.....	73
6.5.27	Client Redundancy Server Facet	74
6.5.28	Redundancy Transparent Server Facet.....	74
6.5.29	Redundancy Visible Server Facet	74
6.5.30	Historical Raw Data Server Facet	75
6.5.31	Historical Aggregate Server Facet	75
6.5.32	Historical Access Structured Data Server Facet.....	76
6.5.33	Historical Data AtTime Server Facet	77
6.5.34	Historical Access Modified Data Server Facet.....	77
6.5.35	Historical Annotation Server Facet.....	77
6.5.36	Historical Data Update Server Facet.....	77
6.5.37	Historical Data Replace Server Facet	78
6.5.38	Historical Data Insert Server Facet	78
6.5.39	Historical Data Delete Server Facet	78
6.5.40	Base Historical Event Server Facet.....	78
6.5.41	Historical Event Update Server Facet	79
6.5.42	Historical Event Replace Server Facet.....	79
6.5.43	Historical Event Insert Server Facet.....	79
6.5.44	Historical Event Delete Server Facet	79
6.5.45	Aggregate Subscription Server Facet.....	79
6.5.46	Nano Embedded Device Server Profile	80
6.5.47	Micro Embedded Device Server Profile.....	81
6.5.48	Embedded UA Server Profile	81
6.5.49	Standard UA Server Profile	81
6.5.50	Core Client Facet.....	82
6.5.51	Base Client Behaviour Facet.....	82
6.5.52	Discovery Client Facet.....	83
6.5.53	AddressSpace Lookup Client Facet	83
6.5.54	Entry-Level Support Client Facet	83
6.5.55	Multi-Server Client Connection Facet.....	84
6.5.56	File Access Client Facet	84
6.5.57	Documentation – Client	84
6.5.58	Attribute Read Client Facet.....	84
6.5.59	Attribute Write Client Facet.....	85
6.5.60	DataChange Subscriber Client Facet	85
6.5.61	DataAccess Client Facet.....	85
6.5.62	Event Subscriber Client Facet.....	85
6.5.63	Notifier and Source Hierarchy Client Facet	86
6.5.64	A & C Base ConditionClient Facet	86
6.5.65	A & C Address Space Instance Client Facet	86
6.5.66	A & C Enable Client Facet	87
6.5.67	A & C Alarm Client Facet.....	87
6.5.68	A & C Exclusive Alarming Client Facet.....	87
6.5.69	A & C Non-Exclusive Alarming Client Facet	87
6.5.70	A & C Previous Instances Client Facet.....	88
6.5.71	A & C Dialog Client Facet.....	88
6.5.72	A & E Proxy Facet	88

6.5.73	Method Client Facet.....	89
6.5.74	Auditing Client Facet	90
6.5.75	Node Management Client Facet.....	90
6.5.76	Advanced Type Programming Client Facet	90
6.5.77	Diagnostic Client Facet.....	90
6.5.78	Redundant Client Facet	91
6.5.79	Redundancy Switch Client Facet	91
6.5.80	Historical Access Client Facet	91
6.5.81	Historical Annotation Client Facet.....	91
6.5.82	Historical Data AtTime Client Facet	91
6.5.83	Historical Aggregate Client Facet.....	92
6.5.84	Historical Data Update Client Facet	93
6.5.85	Historical Data Replace Client Facet.....	93
6.5.86	Historical Data Insert Client Facet	93
6.5.87	Historical Data Delete Client Facet	93
6.5.88	Historical Access Client Server Timestamp Facet	93
6.5.89	Historical Access Modified Data Client Facet	94
6.5.90	Structured Data AtTime Client Facet.....	94
6.5.91	Historical Structured Data Access Client Facet	94
6.5.92	Historical Structured Data Modified Client Facet	94
6.5.93	Historical Structured Data Delete Client Facet.....	94
6.5.94	Historical Structured Data Update Client Facet	95
6.5.95	Historical Structured Data Replace Client Facet	95
6.5.96	Historical Structured Data Insert Client Facet	95
6.5.97	Historical Events Client Facet.....	95
6.5.98	Historical Event Update Client Facet.....	95
6.5.99	Historical Event Replace Client Facet.....	96
6.5.100	Historical Event Delete Client Facet.....	96
6.5.101	Historical Event Insert Client Facet.....	96
6.5.102	Aggregate Subscriber Client Facet	96
6.5.103	User Token – Anonymous Facet	98
6.5.104	User Token – User Name Password Server Facet	98
6.5.105	User Token – X509 Certificate Server Facet	98
6.5.106	User Token – Issued Token Server Facet	98
6.5.107	User Token – Issued Token Windows Server Facet	98
6.5.108	User Token – User Name Password Client Facet.....	99
6.5.109	User Token – X509 Certificate Client Facet	99
6.5.110	User Token – Issued Token Client Facet	99
6.5.111	User Token – Issued Token Windows Client Facet	99
6.5.112	UA-TCP UA-SC UA Binary.....	99
6.5.113	SOAP-HTTP WS-SC UA XML	100
6.5.114	SOAP-HTTP WS-SC UA Binary	100
6.5.115	SOAP-HTTP WS-SC UA XML-UA Binary	100
6.5.116	HTTPS UA Binary	100
6.5.117	HTTPS UA XML.....	101
6.5.118	Security User Access Control Full.....	101
6.5.119	Security User Access Control Base.....	101
6.5.120	Security Time Synchronization.....	101
6.5.121	Best Practice – Audit Events.....	102

6.5.122	Best Practice – Alarm Handling	102
6.5.123	Best Practice – Random Numbers	102
6.5.124	Best Practice – Timeouts	102
6.5.125	Best Practice – Administrative Access	102
6.5.126	Best Practice – Strict Message Handling	103
6.5.127	Best Practice – Audit Events Client.....	103
6.5.128	SecurityPolicy – None.....	103
6.5.129	SecurityPolicy – Basic128Rsa15.....	103
6.5.130	SecurityPolicy – Basic256.....	104
6.5.131	SecurityPolicy – Basic256Sha256.....	104
6.5.132	TransportSecurity – TLS 1.0	105
6.5.133	TransportSecurity – TLS 1.1	105
6.5.134	TransportSecurity – TLS 1.2	105
Bibliography.....		107
Figure 1 – Profile – ConformanceUnit – TestCases		15
Figure 2 – HMI Client sample.....		63
Figure 3 – Embedded Server sample		63
Figure 4 – Standard UA Server sample		64
iTeh STANDARD PREVIEW		
(standards.iteh.ai)		
Table 1 – ProfileCategories.....		16
Table 2 – ConformanceGroups		17
Table 3 – Discovery Services.....		18
Table 4 – Session Services.....		19
Table 5 – Node Management Services.....		20
Table 6 – View Services		21
Table 7 – Attribute Services		22
Table 8 – Method Services		23
Table 9 – Monitored Item Services		24
Table 10 – Subscription Services		27
Table 11 – Security.....		29
Table 12 – Protocol and Encoding		36
Table 13 – Base information		37
Table 14 – Address Space model.....		40
Table 15 – Data Access		42
Table 16 – Alarms and Conditions		43
Table 17 – Historical Access		45
Table 18 – Aggregates.....		49
Table 19 – Auditing.....		55
Table 20 – Redundancy		55
Table 21 – Miscellaneous		56
Table 22 – Profile list.....		58
Table 23 – Core Server Facet.....		65
Table 24 – Base Server Behaviour Facet.....		65

Table 25 – Attribute WriteMask Server Facet	66
Table 26 – File Access Server Facet	66
Table 27 – Documentation Server Facet	66
Table 28 – Embedded DataChange Subscription Server Facet	67
Table 29 – Standard DataChange Subscription Server Facet	67
Table 30 – Enhanced DataChange Subscription Server Facet	67
Table 31 – Data Access Server Facet	68
Table 32 – ComplexType Server Facet	68
Table 33 – Standard Event Subscription Server Facet	69
Table 34 – Address Space Notifier Server Facet	69
Table 35 – A & C Base Condition Server Facet	69
Table 36 – A & C Address Space Instance Server Facet	70
Table 37 – A & C Enable Server Facet	70
Table 38 – A & C Alarm Server Facet	70
Table 39 – A & C Acknowledgeable Alarm Server Facet	71
Table 40 – A & C Exclusive Alarming Server Facet	71
Table 41 – A & C Non-Exclusive Alarming Server Facet	71
Table 42 – A & C Previous Instances Server Facet	72
Table 43 – A & C Dialog Server Facet	72
Table 44 – A & E Wrapper Facet	73
Table 45 – Method Server Facet	73
Table 46 – Auditing Server Facet	73
Table 47 – Node Management Server Facet	74
Table 48 – Client Redundancy Server Facet	74
Table 49 – Redundancy Transparent Server Facet	74
Table 50 – Redundancy Visible Server Facet	75
Table 51 – Historical Raw Data Server Facet	75
Table 52 – Historical Aggregate Server Facet	76
Table 53 – Historical Access Structured Data Server Facet	77
Table 54 – Historical Data AtTime Server Facet	77
Table 55 – Historical Access Modified Data Server Facet	77
Table 56 – Historical Annotation Server Facet	77
Table 57 – Historical Data Update Server Facet	78
Table 58 – Historical Data Replace Server Facet	78
Table 59 – Historical Data Insert Server Facet	78
Table 60 – Historical Data Delete Server Facet	78
Table 61 – Base Historical Event Server Facet	79
Table 62 – Historical Event Update Server Facet	79
Table 63 – Historical Event Replace Server Facet	79
Table 64 – Historical Event Insert Server Facet	79
Table 65 – Historical Event Delete Server Facet	79
Table 66 – Aggregate Subscription Server Facet	80
Table 67 – Nano Embedded Device Server Profile	81



<https://standards.iteh.ai/catalog/standards/sist/bc789139-b090-4263-85ac-7061720004/iec-62541-7-2015>

 (standards.iteh.ai)

Table 68 – Micro Embedded Device Server Profile.....	81
Table 69 – Embedded UA Server Profile	81
Table 70 – Standard UA Server Profile	82
Table 71 – Core Client Facet	82
Table 72 – Base Client Behaviour Facet	83
Table 73 – Discovery Client Facet.....	83
Table 74 – AddressSpace Lookup Client Facet	83
Table 75 – Entry-Level SupportClient Facet.....	84
Table 76 – Multi-Server Client Connection Facet	84
Table 77 –File Access Client Facet.....	84
Table 78 – Documentation – Client	84
Table 79 – Attribute Read Client Facet	84
Table 80 – Attribute Write Client Facet	85
Table 81 – DataChange Subscriber Client Facet.....	85
Table 82 – DataAccess Client Facet	85
Table 83 – Event Subscriber Client Facet	86
Table 84 – Notifier and Source Hierarchy Client Facet.....	86
Table 85 – A & C Base Condition Client Facet.....	86
Table 86 – A & C Address Space Instance Client Facet.....	86
Table 87 – A & C Enable Client Facet.....	87
Table 88 – A & C Alarm Client Facet.....	87
Table 89 – A & C Exclusive Alarming Client Facet.....	87
Table 90 – A & C Non-Exclusive Alarming Client Facet.....	88
Table 91 – A & C Previous Instances Client Facet	88
Table 92 – A & C Dialog Client Facet.....	88
Table 93 – A & E Proxy Facet.....	89
Table 94 – Method Client Facet	89
Table 95 – Auditing Client Facet.....	90
Table 96 – Node Management Client Facet.....	90
Table 97 – Advanced Type Programming Client Facet	90
Table 98 – Diagnostic Client Facet	90
Table 99 – Redundant Client Facet.....	91
Table 100 – Redundancy Switch Client Facet	91
Table 101 – Historical Access Client Facet	91
Table 102 – Historical Annotation Client Facet.....	91
Table 103 – Historical Data AtTime Client Facet	92
Table 104 – Historical Aggregate Client Facet	92
Table 105 – Historical Data Update Client Facet.....	93
Table 106 – Historical Data Replace Client Facet	93
Table 107 – Historical Data Insert Client Facet	93
Table 108 – Historical Data Delete Client Facet.....	93
Table 109 – Historical Access Client Server Timestamp Facet.....	93
Table 110 – Historical Access Modified Data Client Facet.....	94

Table 111 – Historical Structured Data AtTime Client Facet	94
Table 112 – Historical Structured Data Access Client Facet	94
Table 113 – Historical Structured Data Modified Client Facet	94
Table 114 – Historical Structured Data Delete Client Facet	95
Table 115 – Historical Structured Data Update Client Facet	95
Table 116 – Historical Structured Data Replace Client Facet	95
Table 117 – Historical Structured Data Insert Client Facet	95
Table 118 – Historical Events Client Facet	95
Table 119 – Historical Event Update Client Facet	96
Table 120 – Historical Event Replace Client Facet	96
Table 121 – Historical Event Delete Client Facet	96
Table 122 – Historical Event Insert Client Facet	96
Table 123 – Aggregate Subscriber Client Facet	97
Table 124 – User Token – Anonymous Facet	98
Table 125 – User Token – User Name Password Server Facet	98
Table 126 – User Token – X509 Certificate Server Facet	98
Table 127 – User Token – Issued Token Server Facet	98
Table 128 – User Token – Issued Token Windows Server Facet	99
Table 129 – User Token – User Name Password Client Facet	99
Table 130 – User Token – X509 Certificate Client Facet	99
Table 131 – User Token – Issued Token Client Facet	99
Table 132 – User Token – Issued Token Windows Client Facet	99
Table 133 – UA-TCP UA-SC UA Binary	100
Table 134 – SOAP-HTTP WS-SC UA XML	100
Table 135 – SOAP-HTTP WS-SC UA Binary	100
Table 136 – SOAP-HTTP WS-SC UA XML-UA Binary	100
Table 137 – HTTPS UA Binary	101
Table 138 – HTTPS UA XML	101
Table 139 – Security User Access Control Full	101
Table 140 – Security User Access Control Base	101
Table 141 – Security Time Synchronization	102
Table 142 – Best Practice – Audit Events	102
Table 143 – Best Practice – Alarm Handling	102
Table 144 – Best Practice – Random Numbers	102
Table 145 – Best Practice – Timeouts	102
Table 146 – Best Practice – Administrative Access	103
Table 147 – Best Practice – Strict Message Handling	103
Table 148 – Best Practice – Audit Events Client	103
Table 149 – SecurityPolicy – None	103
Table 150 – SecurityPolicy – Basic128Rsa15	104
Table 151 – SecurityPolicy – Basic256	104
Table 152 – SecurityPolicy – Basic256Sha256	105
Table 153 – TransportSecurity – TLS 1.0	105

Table 154 – TransportSecurity – TLS 1.1	105
Table 155 – TransportSecurity – TLS 1.2	106

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 62541-7:2015](https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015)

<https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPC UNIFIED ARCHITECTURE –

Part 7: Profiles

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
<https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-62541-7-2015>
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62541-7 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Added a large number of new Facets to cover additional functional areas of OPC UA. Most significantly:
 - Facets for Historical Access;
 - Facets for Aggregates;
 - Facets for HTTPs

- New Security Facets
 - New User Token Facet that supports anonymous access
 - Best Practice Facets,
- b) New Security Policy for asymmetric key length > 2048

The text of this standard is based on the following documents:

CDV	Report on voting
65E/378/CDV	65E/406/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62541 series, published under the general title *OPC Unified Architecture*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/be789139-b090-4263-85ac-f44aff736d04/iec-62541-7-2015>

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

OPC UNIFIED ARCHITECTURE –

Part 7: Profiles

1 Scope

This part of IEC 62541 describes the OPC Unified Architecture (OPC UA) *Profiles*. The *Profiles* in this document are used to segregate features with regard to testing of OPC UA products and the nature of the testing (tool based or lab based). This includes the testing performed by the OPC Foundation provided OPC UA CTT (a self-test tool) and by the OPC Foundation provided Independent certification test labs. This could equally as well refer to test tools provided by another organization or a test lab provided by another organization. What is important is the concept of automated tool based testing versus lab based testing. The scope of this standard includes defining functionality that can only be tested in a lab and defining the grouping of functionality that is to be used when testing OPC UA products either in a lab or using automated tools. The definition of actual *TestCases* is not within the scope of this document, but the general categories of *TestCases* are within the scope of this document.

Most OPC UA applications will conform to several, but not all of, the *Profiles*.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC TR 62541-1, *OPC unified architecture – Part 1: Overview and concepts*

IEC TR 62541-2, *OPC unified architecture – Part 2: Security model*

IEC 62541-3, *OPC unified architecture – Part 3: Address space model*

IEC 62541-4, *OPC unified architecture – Part 4: Services*

IEC 62541-5, *OPC unified architecture – Part 5: Information model*

IEC 62541-6, *OPC unified architecture – Part 6: Mappings*

IEC 62541-8, *OPC unified architecture – Part 8: Data access*

IEC 62541-9, *OPC unified architecture – Part 9: Alarms and conditions*

IEC 62541-11¹, *OPC unified architecture – Part 11: Historical access*

IEC 62541-13¹, *OPC unified architecture – Part 13: Aggregates*

¹ To be published.

3 Terms, definitions, and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TR 62541-1, IEC TR 62541-2, IEC 62541-3, IEC 62541-4, IEC 62541-6, and IEC 62541-8 as well as the following apply. An overview of the terms defined in this standard and their interaction can be viewed in Figure 1.

3.1.1 application

software program that executes or implements some aspect of OPC UA

Note 1 to entry: The application could run on any machine and perform any function. The application could be software or it could be a hardware application, the only requirement is that it implements OPC UA.

3.1.2 ConformanceUnit

specific set of OPC UA features that can be tested as a single entity

Note 1 to entry: A *ConformanceUnit* can cover a group of services, portions of services or information models. For additional detail see Clause 5.

3.1.3 ConformanceGroup

group of *ConformanceUnits* that is given a name

Note 1 to entry: This grouping is only to assist in organizing *ConformanceUnits*. Typical *ConformanceGroups* include groups for each of the service sets in OPC UA and each of the Information Model standards.

3.1.4 Facet

Profile dedicated to a specific feature that a *Server* or *Client* may require

Note 1 to entry: *Facets* are typically combined to form higher-level *Profiles*. The use of the term *Facet* in the title of a *Profile* indicates that the given *Profile* is not a standalone *Profile*.

3.1.5 FullFeatured Profile

Profile that defines all features necessary to build a functional OPC UA *Application*

Note 1 to entry: A *FullFeatured Profile* in particular adds definitions of the transport and security requirements.

3.1.6 ProfileCategory

arranges *Profiles* into application classes, such as *Server* or *Client*

Note 1 to entry: These categories help determine the type of *Application* that a given *Profile* would be used for. For additional details see 4.4.

3.1.7 TestCase

technical description of a set of steps required to test a particular function or information model

Note 1 to entry: *TestCases* provide sufficient details to allow a developer to implement them in code. *TestCases* also provide a detailed summary of the expected result(s) from the execution of the implemented code and any precondition(s) that must be established before the *TestCase* can be executed.

3.1.8 TestLab

facility that is designated to provide testing services