

**SS IEC 62541-7:2022**  
**IEC 62541-7:2020, IDT**  
(ICS 25.040.40; 35.100.05)

**SINGAPORE STANDARD**

# **OPC unified architecture**

– Part 7 : Profiles

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This Singapore Standard was prepared by the Working Group on Open Platform Communications unified architecture set up by the Technical Committee on Smart Manufacturing under the purview of the Manufacturing Standards Committee.

This standard is a revision of SS IEC 62541-7:2019 and is an identical adoption of IEC 62541-7:2020, “OPC unified architecture – Part 7 : Profiles”, published by the International Electrotechnical Commission.

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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**OPC unified architecture –  
Part 7: Profiles**

**Architecture unifiée OPC –  
Partie 7: Profils**





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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**OPC unified architecture –  
Part 7: Profiles**

**Architecture unifiée OPC –  
Partie 7: Profils**

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## CONTENTS

FOREWORD .....	12
1 Scope .....	15
2 Normative references .....	15
3 Terms, definitions, and abbreviated terms .....	16
3.1 Terms and definitions.....	16
3.2 Abbreviated terms.....	17
4 Overview .....	17
4.1 General.....	17
4.2 ConformanceUnit .....	18
4.3 Profiles .....	18
4.4 Profile Categories .....	19
5 Conformance Units .....	19
5.1 Overview.....	19
5.2 Services.....	20
5.3 Transport and communication related features.....	30
5.4 Information Model and AddressSpace related features.....	38
5.5 Miscellaneous .....	55
6 Profiles .....	57
6.1 Overview.....	57
6.2 Profile list .....	57
6.3 Conventions for Profile definitions.....	64
6.4 Profile versioning .....	64
6.5 Applications .....	64
6.6 Profile tables.....	66
6.6.1 General .....	66
6.6.2 Core Server Facet .....	66
6.6.3 Core 2017 Server Facet.....	66
6.6.4 Sessionless Server Facet .....	67
6.6.5 Reverse Connect Server Facet .....	67
6.6.6 Base Server Behaviour Facet .....	68
6.6.7 Request State Change Server Facet.....	68
6.6.8 Subnet Discovery Server Facet.....	68
6.6.9 Global Certificate Management Server Facet.....	68
6.6.10 Authorization Service Server Facet.....	69
6.6.11 KeyCredential Service Server Facet .....	69
6.6.12 Attribute WriteMask Server Facet .....	69
6.6.13 File Access Server Facet.....	69
6.6.14 Documentation Server Facet .....	70
6.6.15 Embedded DataChange Subscription Server Facet.....	70
6.6.16 Standard DataChange Subscription Server Facet .....	70
6.6.17 Standard DataChange Subscription 2017 Server Facet.....	71
6.6.18 Enhanced DataChange Subscription Server Facet.....	71
6.6.19 Enhanced DataChange Subscription 2017 Server Facet .....	71
6.6.20 Durable Subscription Server Facet .....	71
6.6.21 Data Access Server Facet .....	72
6.6.22 ComplexType Server Facet.....	72

6.6.23	ComplexType 2017 Server Facet .....	72
6.6.24	Standard Event Subscription Server Facet .....	73
6.6.25	Address Space Notifier Server Facet .....	74
6.6.26	A & C Base Condition Server Facet .....	74
6.6.27	A & C Refresh2 Server Facet .....	74
6.6.28	A & C Address Space Instance Server Facet .....	74
6.6.29	A & C Enable Server Facet .....	75
6.6.30	A & C AlarmMetrics Server Facet .....	75
6.6.31	A & C Alarm Server Facet .....	75
6.6.32	A & C Acknowledgeable Alarm Server Facet .....	76
6.6.33	A & C Exclusive Alarming Server Facet .....	76
6.6.34	A & C Non-Exclusive Alarming Server Facet .....	77
6.6.35	A & C Previous Instances Server Facet .....	77
6.6.36	A & C Dialog Server Facet .....	77
6.6.37	A & C CertificateExpiration Server Facet .....	78
6.6.38	A & E Wrapper Facet .....	78
6.6.39	Method Server Facet .....	79
6.6.40	Auditing Server Facet .....	79
6.6.41	Node Management Server Facet .....	80
6.6.42	User Role Base Server Facet .....	80
6.6.43	User Role Management Server Facet .....	80
6.6.44	State Machine Server Facet .....	81
6.6.45	Client Redundancy Server Facet .....	81
6.6.46	Redundancy Transparent Server Facet .....	81
6.6.47	Redundancy Visible Server Facet .....	82
6.6.48	Historical Raw Data Server Facet .....	82
6.6.49	Historical Aggregate Server Facet .....	82
6.6.50	Historical Data AtTime Server Facet .....	83
6.6.51	Historical Access Modified Data Server Facet .....	84
6.6.52	Historical Annotation Server Facet .....	84
6.6.53	Historical Data Insert Server Facet .....	84
6.6.54	Historical Data Update Server Facet .....	84
6.6.55	Historical Data Replace Server Facet .....	85
6.6.56	Historical Data Delete Server Facet .....	85
6.6.57	Historical Access Structured Data Server Facet .....	85
6.6.58	Base Historical Event Server Facet .....	85
6.6.59	Historical Event Update Server Facet .....	86
6.6.60	Historical Event Replace Server Facet .....	86
6.6.61	Historical Event Insert Server Facet .....	86
6.6.62	Historical Event Delete Server Facet .....	86
6.6.63	Aggregate Subscription Server Facet .....	87
6.6.64	Nano Embedded Device Server Profile .....	88
6.6.65	Nano Embedded Device 2017 Server Profile .....	88
6.6.66	Micro Embedded Device Server Profile .....	88
6.6.67	Micro Embedded Device 2017 Server Profile .....	88
6.6.68	Embedded UA Server Profile .....	88
6.6.69	Embedded 2017 UA Server Profile .....	89
6.6.70	Standard UA Server Profile .....	89
6.6.71	Standard 2017 UA Server Profile .....	89



6.6.72	Core Client Facet.....	90
6.6.73	Core 2017 Client Facet.....	90
6.6.74	Sessionless Client Facet .....	90
6.6.75	Reverse Connect Client Facet .....	90
6.6.76	Base Client Behaviour Facet.....	91
6.6.77	Discovery Client Facet.....	91
6.6.78	Subnet Discovery Client Facet.....	91
6.6.79	Global Discovery Client Facet.....	92
6.6.80	Global Certificate Management Client Facet .....	92
6.6.81	KeyCredential Service Client Facet.....	92
6.6.82	Access Token Request Client Facet .....	92
6.6.83	AddressSpace Lookup Client Facet .....	93
6.6.84	Request State Change Client Facet .....	93
6.6.85	File Access Client Facet .....	93
6.6.86	Entry Level Support 2015 Client Facet.....	94
6.6.87	Multi-Server Client Connection Facet.....	94
6.6.88	Documentation – Client .....	94
6.6.89	Attribute Read Client Facet.....	94
6.6.90	Attribute Write Client Facet.....	95
6.6.91	DataChange Subscriber Client Facet .....	95
6.6.92	Durable Subscription Client Facet.....	96
6.6.93	DataAccess Client Facet.....	96
6.6.94	Event Subscriber Client Facet.....	97
6.6.95	Base Event Processing Client Facet .....	97
6.6.96	Notifier and Source Hierarchy Client Facet .....	98
6.6.97	A & C Base Condition Client Facet .....	98
6.6.98	A & C Refresh2 Client Facet.....	98
6.6.99	A & C Address Space Instance Client Facet .....	99
6.6.100	A & C Enable Client Facet .....	99
6.6.101	A & C AlarmMetrics Client Facet.....	99
6.6.102	A & C Alarm Client Facet .....	99
6.6.103	A & C Exclusive Alarming Client Facet.....	100
6.6.104	A & C Non-Exclusive Alarming Client Facet .....	100
6.6.105	A & C Previous Instances Client Facet.....	101
6.6.106	A & C Dialog Client Facet .....	101
6.6.107	A & C CertificateExpiration Client Facet.....	101
6.6.108	A & E Proxy Facet .....	102
6.6.109	Method Client Facet.....	103
6.6.110	Auditing Client Facet .....	103
6.6.111	Node Management Client Facet.....	103
6.6.112	Advanced Type Programming Client Facet .....	103
6.6.113	User Role Management Client Facet.....	104
6.6.114	State Machine Client Facet.....	104
6.6.115	Diagnostic Client Facet.....	104
6.6.116	Redundant Client Facet .....	105
6.6.117	Redundancy Switch Client Facet .....	105
6.6.118	Historical Access Client Facet .....	105
6.6.119	Historical Data AtTime Client Facet .....	105
6.6.120	Historical Aggregate Client Facet.....	105

6.6.121	Historical Annotation Client Facet .....	107
6.6.122	Historical Access Modified Data Client Facet .....	107
6.6.123	Historical Data Insert Client Facet .....	107
6.6.124	Historical Data Update Client Facet .....	107
6.6.125	Historical Data Replace Client Facet.....	107
6.6.126	Historical Data Delete Client Facet .....	108
6.6.127	Historical Access Client Server Timestamp Facet .....	108
6.6.128	Historical Structured Data Access Client Facet .....	108
6.6.129	Historical Structured Data AtTime Client Facet .....	108
6.6.130	Historical Structured Data Modified Client Facet .....	109
6.6.131	Historical Structured Data Insert Client Facet .....	109
6.6.132	Historical Structured Data Update Client Facet .....	109
6.6.133	Historical Structured Data Replace Client Facet .....	109
6.6.134	Historical Structured Data Delete Client Facet .....	109
6.6.135	Historical Events Client Facet.....	110
6.6.136	Historical Event Insert Client Facet.....	110
6.6.137	Historical Event Update Client Facet.....	110
6.6.138	Historical Event Replace Client Facet.....	110
6.6.139	Historical Event Delete Client Facet.....	111
6.6.140	Aggregate Subscriber Client Facet .....	111
6.6.141	Standard UA Client Profile .....	112
6.6.142	Standard UA Client 2017 Profile .....	112
6.6.143	UA-TCP UA-SC UA-Binary.....	113
6.6.144	HTTPS UA-Binary.....	113
6.6.145	HTTPS UA-XML.....	114
6.6.146	HTTPS UA-JSON.....	114
6.6.147	WSS UA-SC UA-Binary.....	114
6.6.148	WSS UA-JSON .....	114
6.6.149	Security User Access Control Full.....	115
6.6.150	Security User Access Control Base.....	115
6.6.151	Security Time Synchronization.....	115
6.6.152	Best Practice – Audit Events.....	116
6.6.153	Best Practice – Alarm Handling .....	116
6.6.154	Best Practice – Random Numbers .....	116
6.6.155	Best Practice – Timeouts .....	116
6.6.156	Best Practice – Administrative Access .....	116
6.6.157	Best Practice – Strict Message Handling .....	117
6.6.158	Best Practice – Audit Events Client.....	117
6.6.159	TransportSecurity – TLS 1.2 .....	117
6.6.160	TransportSecurity – TLS 1.2 with PFS .....	117
6.6.161	SecurityPolicy – None.....	118
6.6.162	SecurityPolicy – Basic128Rsa15.....	118
6.6.163	SecurityPolicy – Basic256.....	118
6.6.164	SecurityPolicy [A] – Aes128-Sha256-RsaOaep .....	118
6.6.165	SecurityPolicy [B] – Basic256Sha256 .....	119
6.6.166	SecurityPolicy – Aes256-Sha256-RsaPss .....	119
6.6.167	User Token – Anonymous Facet .....	120
6.6.168	User Token – User Name Password Server Facet .....	120
6.6.169	User Token – X509 Certificate Server Facet .....	120

6.6.170	User Token – Issued Token Server Facet .....	121
6.6.171	User Token – Issued Token Windows Server Facet .....	121
6.6.172	User Token – JWT Server Facet .....	121
6.6.173	User Token – User Name Password Client Facet .....	121
6.6.174	User Token – X509 Certificate Client Facet .....	122
6.6.175	User Token – Issued Token Client Facet .....	122
6.6.176	User Token – Issued Token Windows Client Facet .....	122
6.6.177	User Token – JWT Client Facet .....	122
6.6.178	Global Discovery Server Profile .....	122
6.6.179	Global Discovery Server 2017 Profile .....	123
6.6.180	Global Discovery and Certificate Management Server .....	123
6.6.181	Global Discovery and Certificate Mgmt 2017 Server .....	123
6.6.182	Global Certificate Management Client Profile .....	123
6.6.183	Global Certificate Management Client 2017 Profile .....	123
6.6.184	Global Service Authorization Request Server Facet .....	124
6.6.185	Global Service KeyCredential Pull Facet .....	124
6.6.186	Global Service KeyCredential Push Facet .....	124
Bibliography .....		125
Figure 1	– Profile – ConformanceUnit – TestCases .....	18
Figure 2	– HMI Client sample .....	64
Figure 3	– Embedded Server sample .....	65
Figure 4	– Standard UA Server sample .....	65
Table 1	– Profile Categories .....	19
Table 2	– Conformance Groups .....	20
Table 3	– Discovery Services .....	21
Table 4	– Session Services .....	22
Table 5	– Node Management Services .....	23
Table 6	– View Services .....	24
Table 7	– Attribute Services .....	25
Table 8	– Method Services .....	26
Table 9	– Monitored Item Services .....	27
Table 10	– Subscription Services .....	29
Table 11	– Security .....	31
Table 12	– Protocol and Encoding .....	38
Table 13	– Base Information .....	39
Table 14	– Address Space Model .....	41
Table 15	– Data Access .....	42
Table 16	– Alarms and Conditions .....	43
Table 17	– Historical Access .....	46
Table 18	– Aggregates .....	49
Table 19	– Auditing .....	54
Table 20	– Redundancy .....	54
Table 21	– Global Discovery Server .....	55

Table 22 – Miscellaneous .....	56
Table 23 – Profile list .....	58
Table 24 – Core 2017 Server Facet .....	67
Table 25 – Sessionless Server Facet .....	67
Table 26 – Reverse Connect Server Facet .....	68
Table 27 – Base Server Behaviour Facet .....	68
Table 28 – Request State Change Server Facet .....	68
Table 29 – Subnet Discovery Server Facet .....	68
Table 30 – Global Certificate Management Server Facet .....	69
Table 31 – Authorization Service Server Facet .....	69
Table 32 – KeyCredential Service Server Facet .....	69
Table 33 – Attribute WriteMask Server Facet .....	69
Table 34 – File Access Server Facet .....	70
Table 35 – Documentation Server Facet .....	70
Table 36 – Embedded DataChange Subscription Server Facet .....	70
Table 37 – Standard DataChange Subscription 2017 Server Facet .....	71
Table 38 – Enhanced DataChange Subscription 2017 Server Facet .....	71
Table 39 – Durable Subscription Server Facet .....	72
Table 40 – Data Access Server Facet .....	72
Table 41 – ComplexType 2017 Server Facet .....	73
Table 42 – Standard Event Subscription Server Facet .....	73
Table 43 – Address Space Notifier Server Facet .....	74
Table 44 – A & C Base Condition Server Facet .....	74
Table 45 – A & C Refresh2 Server Facet .....	74
Table 46 – A & C Address Space Instance Server Facet .....	75
Table 47 – A & C Enable Server Facet .....	75
Table 48 – A & C AlarmMetrics Server Facet .....	75
Table 49 – A & C Alarm Server Facet .....	76
Table 50 – A & C Acknowledgeable Alarm Server Facet .....	76
Table 51 – A & C Exclusive Alarming Server Facet .....	77
Table 52 – A & C Non-Exclusive Alarming Server Facet .....	77
Table 53 – A & C Previous Instances Server Facet .....	77
Table 54 – A & C Dialog Server Facet .....	78
Table 55 – A & C CertificateExpiration Server Facet .....	78
Table 56 – A & E Wrapper Facet .....	79
Table 57 – Method Server Facet .....	79
Table 58 – Auditing Server Facet .....	80
Table 59 – Node Management Server Facet .....	80
Table 60 – User Role Base Server Facet .....	80
Table 61 – User Role Management Server Facet .....	81
Table 62 – State Machine Server Facet .....	81
Table 63 – Client Redundancy Server Facet .....	81
Table 64 – Redundancy Transparent Server Facet .....	81

Table 65 – Redundancy Visible Server Facet.....	82
Table 66 – Historical Raw Data Server Facet.....	82
Table 67 – Historical Aggregate Server Facet.....	83
Table 68 – Historical Data AtTime Server Facet.....	84
Table 69 – Historical Access Modified Data Server Facet.....	84
Table 70 – Historical Annotation Server Facet.....	84
Table 71 – Historical Data Insert Server Facet.....	84
Table 72 – Historical Data Update Server Facet.....	85
Table 73 – Historical Data Replace Server Facet.....	85
Table 74 – Historical Data Delete Server Facet.....	85
Table 75 – Historical Access Structured Data Server Facet.....	85
Table 76 – Base Historical Event Server Facet.....	86
Table 77 – Historical Event Update Server Facet.....	86
Table 78 – Historical Event Replace Server Facet.....	86
Table 79 – Historical Event Insert Server Facet.....	86
Table 80 – Historical Event Delete Server Facet.....	86
Table 81 – Aggregate Subscription Server Facet.....	87
Table 82 – Nano Embedded Device 2017 Server Profile.....	88
Table 83 – Micro Embedded Device 2017 Server Profile.....	88
Table 84 – Embedded 2017 UA Server Profile.....	89
Table 85 – Standard 2017 UA Server Profile.....	89
Table 86 – Core 2017 Client Facet.....	90
Table 87 – Sessionless Client Facet.....	90
Table 88 – Reverse Connect Client Facet.....	91
Table 89 – Base Client Behaviour Facet.....	91
Table 90 – Discovery Client Facet.....	91
Table 91 – Subnet Discovery Client Facet.....	92
Table 92 – Global Discovery Client Facet.....	92
Table 93 – Global Certificate Management Client Facet.....	92
Table 94 – KeyCredential Service Client Facet.....	92
Table 95 – Access Token Request Client Facet.....	93
Table 96 – AddressSpace Lookup Client Facet.....	93
Table 97 – Request State Change Client Facet.....	93
Table 98 – File Access Client Facet.....	93
Table 99 – Entry Level Support 2015 Client Facet.....	94
Table 100 – Multi-Server Client Connection Facet.....	94
Table 101 – Documentation – Client.....	94
Table 102 – Attribute Read Client Facet.....	95
Table 103 – Attribute Write Client Facet.....	95
Table 104 – DataChange Subscriber Client Facet.....	96
Table 105 – Durable Subscription Client Facet.....	96
Table 106 – DataAccess Client Facet.....	97
Table 107 – Event Subscriber Client Facet.....	97

Table 108 – Base Event Processing Client Facet .....	98
Table 109 – Notifier and Source Hierarchy Client Facet .....	98
Table 110 – A & C Base Condition Client Facet .....	98
Table 111 – A & C Refresh2 Client Facet.....	99
Table 112 – A & C Address Space Instance Client Facet .....	99
Table 113 – A & C Enable Client Facet .....	99
Table 114 – A & C AlarmMetrics Client Facet.....	99
Table 115 – A & C Alarm Client Facet.....	100
Table 116 – A & C Exclusive Alarming Client Facet .....	100
Table 117 – A & C Non-Exclusive Alarming Client Facet.....	101
Table 118 – A & C Previous Instances Client Facet .....	101
Table 119 – A & C Dialog Client Facet .....	101
Table 120 – A & C CertificateExpiration Client Facet .....	101
Table 121 – A & E Proxy Facet .....	102
Table 122 – Method Client Facet .....	103
Table 123 – Auditing Client Facet .....	103
Table 124 – Node Management Client Facet.....	103
Table 125 – Advanced Type Programming Client Facet .....	104
Table 126 – User Role Management Client Facet .....	104
Table 127 – State Machine Client Facet.....	104
Table 128 – Diagnostic Client Facet.....	104
Table 129 – Redundant Client Facet .....	105
Table 130 – Redundancy Switch Client Facet .....	105
Table 131 – Historical Access Client Facet .....	105
Table 132 – Historical Data AtTime Client Facet .....	105
Table 133 – Historical Aggregate Client Facet .....	106
Table 134 – Historical Annotation Client Facet.....	107
Table 135 – Historical Access Modified Data Client Facet.....	107
Table 136 – Historical Data Insert Client Facet .....	107
Table 137 – Historical Data Update Client Facet .....	107
Table 138 – Historical Data Replace Client Facet .....	108
Table 139 – Historical Data Delete Client Facet.....	108
Table 140 – Historical Access Client Server Timestamp Facet.....	108
Table 141 – Historical Structured Data Access Client Facet.....	108
Table 142 – Historical Structured Data AtTime Client Facet.....	108
Table 143 – Historical Structured Data Modified Client Facet.....	109
Table 144 – Historical Structured Data Insert Client Facet .....	109
Table 145 – Historical Structured Data Update Client Facet.....	109
Table 146 – Historical Structured Data Replace Client Facet .....	109
Table 147 – Historical Structured Data Delete Client Facet.....	110
Table 148 – Historical Events Client Facet.....	110
Table 149 – Historical Event Insert Client Facet.....	110
Table 150 – Historical Event Update Client Facet .....	110

Table 151 – Historical Event Replace Client Facet .....	110
Table 152 – Historical Event Delete Client Facet .....	111
Table 153 – Aggregate Subscriber Client Facet .....	111
Table 154 – Standard UA Client 2017 Profile .....	113
Table 155 – UA-TCP UA-SC UA-Binary .....	113
Table 156 – HTTPS UA-Binary .....	113
Table 157 – HTTPS UA-XML .....	114
Table 158 – HTTPS UA-JSON .....	114
Table 159 – WSS UA-SC UA-Binary .....	114
Table 160 – WSS UA-JSON .....	115
Table 161 – Security User Access Control Full .....	115
Table 162 – Security User Access Control Base .....	115
Table 163 – Security Time Synchronization .....	115
Table 164 – Best Practice – Audit Events .....	116
Table 165 – Best Practice – Alarm Handling .....	116
Table 166 – Best Practice – Random Numbers .....	116
Table 167 – Best Practice – Timeouts .....	116
Table 168 – Best Practice – Administrative Access .....	117
Table 169 – Best Practice – Strict Message Handling .....	117
Table 170 – Best Practice – Audit Events Client .....	117
Table 171 – TransportSecurity – TLS 1.2 .....	117
Table 172 – TransportSecurity – TLS 1.2 with PFS .....	118
Table 173 – SecurityPolicy – None .....	118
Table 174 – SecurityPolicy [A] – Aes128-Sha256-RsaOaep .....	119
Table 175 – SecurityPolicy [B] – Basic256Sha256 .....	119
Table 176 – SecurityPolicy – Aes256-Sha256-RsaPss .....	120
Table 177 – User Token – Anonymous Facet .....	120
Table 178 – User Token – User Name Password Server Facet .....	120
Table 179 – User Token – X509 Certificate Server Facet .....	120
Table 180 – User Token – Issued Token Server Facet .....	121
Table 181 – User Token – Issued Token Windows Server Facet .....	121
Table 182 – User Token – JWT Server Facet .....	121
Table 183 – User Token – User Name Password Client Facet .....	121
Table 184 – User Token – X509 Certificate Client Facet .....	122
Table 185 – User Token – Issued Token Client Facet .....	122
Table 186 – User Token – Issued Token Windows Client Facet .....	122
Table 187 – User Token – JWT Client Facet .....	122
Table 188 – Global Discovery Server 2017 Profile .....	123
Table 189 – Global Discovery and Certificate Mgmt 2017 Server .....	123
Table 190 – Global Certificate Management Client 2017 Profile .....	124
Table 191 – Global Service Authorization Request Server Facet .....	124

Table 192 – Global Service KeyCredential Pull Facet .....	124
Table 193 – Global Service KeyCredential Push Facet.....	124



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**OPC UNIFIED ARCHITECTURE –****Part 7: Profiles****FOREWORD**

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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 third edition cancels and replaces the second edition published in 2015. This edition constitutes a technical revision.

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

- a) new functional Profiles:
  - profiles for global discovery and global certificate management;
  - profiles for global KeyCredential management and global access token management;
  - facet for durable subscriptions;
  - standard UA Client Profile;

- profiles for administration of user roles and permissions.
- b) new transport Profiles:
- HTTPS with JSON encoding;
  - secure WebSockets (WSS) with binary or JSON encoding;
  - reverse connectivity.
- c) new security Profiles:
- transportSecurity – TLS 1.2 with PFS (with perfect forward secrecy);
  - securityPolicy [A] – Aes128-Sha256-RsaOaep (replaces Base128Rsa15);
  - securityPolicy – Aes256-Sha256-RsaPss adds perfect forward secrecy for UA TCP);
  - user Token JWT (Jason Web Token).
- d) deprecated Security Profiles (due to broken algorithms):
- securityPolicy – Basic128Rsa15 (broken algorithm Sha1);
  - securityPolicy – Basic256 (broken algorithm Sha1);
  - transportSecurity – TLS 1.0 (broken algorithm RC4);
  - transportSecurity – TLS 1.1 (broken algorithm RC4).
- e) deprecated Transport (missing support on most platforms):
- SOAP/HTTP with WS-SecureConversation (all encodings).

The text of this International Standard is based on the following documents:

FDIS	Report on voting
65E/707/FDIS	65E/725/RVD

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

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

Throughout this document and the other parts of the IEC 62541 series, certain document conventions are used:

*Italics* are used to denote a defined term or definition that appears in the "Terms and definition" clause in one of the parts of the IEC 62541 series.

*Italics* are also used to denote the name of a service input or output parameter or the name of a structure or element of a structure that are usually defined in tables.

The *italicized terms and names* are, with a few exceptions, written in camel-case (the practice of writing compound words or phrases in which the elements are joined without spaces, with each element's initial letter capitalized within the compound). For example the defined term is *AddressSpace* instead of Address Space. This makes it easier to understand that there is a single definition for *AddressSpace*, not separate definitions for Address and Space.

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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

**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 defines 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*.

#### 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.

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 62541-11, *OPC Unified Architecture – Part 11: Historical Access*

IEC 62541-12, *OPC Unified Architecture – Part 12: Discovery and Global Services*

IEC 62541-13, *OPC Unified Architecture – Part 13: Aggregates*

Compliance Part 8 UA Server: OPC Test Lab Specification: Part 8 – UA Server  
<http://www.opcfoundation.org/Test/Part8/>

Compliance Part 9 UA Client: OPC Test Lab Specification: Part 9 – UA Client  
<http://www.opcfoundation.org/Test/Part9/>