



BSI Standards Publication

OPC unified architecture

Part 1: Overview and concepts

National foreword

This Published Document is the UK implementation of CLC IEC/TR 62541-1:2021. It is identical to IEC TR 62541-1:2020. It supersedes PD CLC/TR 62541-1:2010 and PD IEC TR 62541-1:2020, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/65/3, Industrial communications: process measurement and control, including fieldbus.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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31 August 2021	This corrigendum renumbers PD IEC TR 62541-1:2020 as PD CLC IEC/TR 62541-1:2021

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CLC IEC/TR 62541-1

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Supersedes CLC/TR 62541-1:2010

English Version

**OPC unified architecture - Part 1: Overview and concepts
(IEC/TR 62541-1:2020)**

Architecture unifiée OPC - Partie 1: Vue d'ensemble et
concepts
(IEC/TR 62541-1:2020)

OPC Unified Architecture - Teil 1: Übersicht und Konzepte
(IEC/TR 62541-1:2020)

This Technical Report was approved by CENELEC on 2021-07-05.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (CLC IEC/TR 62541-1:2021) consists of the text of IEC/TR 62541-1:2020, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation".

This document supersedes CLC/TR 62541-1:2010.

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Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Technical Report IEC/TR 62541-1:2020 was approved by CENELEC as a European Technical Report without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 62541-2	-	OPC unified architecture – Part 2: Security Mode	CLC/TR 62541-2	-
IEC 62541-3	-	OPC Unified Architecture - Part 3: Address Space Model	EN IEC 62541-3	-
IEC 62541-4	-	OPC Unified Architecture - Part 4: Services	EN IEC 62541-4	-
IEC 62541-5	-	OPC Unified Architecture - Part 5: Information Model	EN IEC 62541-5	-
IEC 62541-6	-	OPC Unified Architecture - Part 6: Mappings	EN IEC 62541-6	-
IEC 62541-7	-	OPC unified architecture - Part 7: Profiles	EN IEC 62541-7	-
IEC 62541-8	-	OPC Unified Architecture - Part 8: Data Access	EN IEC 62541-8	-
IEC 62541-9	-	OPC Unified Architecture - Part 9: Alarms and Conditions	EN IEC 62541-9	-
IEC 62541-10	-	OPC Unified Architecture - Part 10: Programs	EN IEC 62541-10	-
IEC 62541-11	-	OPC Unified Architecture - Part 11: Historical Access	EN IEC 62541-11	-
IEC 62541-12	-	OPC unified architecture - Part 12: Discovery and global services	EN IEC 62541-12	-
IEC 62541-13	-	OPC Unified Architecture - Part 13: Aggregates	EN IEC 62541-13	-
IEC 62541-14	-	OPC unified architecture - Part 14: PubSub	EN IEC 62541-14	-
ITU X.509	-	Information technology – Open Systems Interconnection – The Directory: Public-key and attribute certificate frameworks https://www.itu.int/rec/T-REC-X.509		

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CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, and abbreviated terms	7
3.1 Terms and definitions	7
3.2 Abbreviated terms	11
4 Structure of the OPC UA series	12
4.1 Specification organization	12
4.2 Core specification parts	12
4.3 Access Type specification parts	13
4.4 Utility specification parts	13
5 Overview	14
5.1 UA scope	14
5.2 General	14
5.3 Design goals	14
5.4 Integrated models and services	16
5.4.1 Security model	16
5.4.2 Integrated AddressSpace model	17
5.4.3 Integrated object model	18
5.4.4 Integrated services	18
5.5 Sessions	18
6 Systems concepts	19
6.1 Client Server Overview	19
6.2 OPC UA Clients	19
6.3 OPC UA Servers	20
6.3.1 General	20
6.3.2 Real objects	20
6.3.3 Server application	20
6.3.4 OPC UA AddressSpace	21
6.3.5 Subscription entities	21
6.3.6 OPC UA Service Interface	21
6.3.7 Server to Server interactions	22
6.4 Redundancy	23
6.5 Publish-Subscribe	23
6.6 Synergy of models	24
7 Service Sets	25
7.1 General	25
7.2 Discovery Service Set	25
7.3 SecureChannel Service Set	25
7.4 Session Service Set	26
7.5 NodeManagement Service Set	26
7.6 View Service Set	26
7.7 Query Service Set	26
7.8 Attribute Service Set	27
7.9 Method Service Set	27
7.10 MonitoredItem Service Set	27

7.11 Subscription Service Set	28
Figure 1 – OPC UA specification organization	12
Figure 2 – OPC UA target applications	15
Figure 3 – OPC UA System architecture	19
Figure 4 – OPC UA Client architecture	19
Figure 5 – OPC UA Server architecture	20
Figure 6 – Peer-to-peer interactions between Servers	22
Figure 7 – Chained Server example	23
Figure 8 – Integrated Client Server and PubSub models	24
Figure 9 – SecureChannel and Session Services	26

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPC UNIFIED ARCHITECTURE –

Part 1: Overview and concepts

FOREWORD

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IEC TR 62541-1, which is a Technical Report, 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 of IEC TR 62541-1, published in 2016. This edition constitutes a technical revision.

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

- a) added Subclauses 6.5 and 6.6 and other text throughout to include PubSub introduction;
- b) added new transports and encodings to existing overview sections;
- c) removed WS-SecureConversation example since this mapping has been deprecated;

d) improved the definition of Certificate.

The text of this Technical Report is based on the following documents:

Enquiry draft	Report on voting
65E/678/DTR	65E/702/RVDTR

Full information on the voting for the approval of this technical report 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.

Throughout this document and the referenced other Parts of the 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 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 also often 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 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.

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 1: Overview and concepts

1 Scope

This part of IEC 62541 presents the concepts and overview of the OPC Unified Architecture (OPC UA). Reading this document is helpful to understand the remaining parts of this multi-part document set. Each of the other parts of IEC 62541 is briefly explained along with a suggested reading order.

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.

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

IEC 62541-14, *OPC unified architecture – Part 14: PubSub*

ITU X.509, *Information technology – Open Systems Interconnection – The Directory: Public-key and attribute certificate frameworks*
<https://www.itu.int/rec/T-REC-X.509>