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OPC unified architecture - Part 4: Services

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/15

Obsahuje: EN 62541-4:2015, IEC 62541-4:2015

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62541-4

May 2015

ICS 35.100; 25.040.40

Supersedes EN 62541-4:2011

English Version

OPC unified architecture - Part 4: Services
(IEC 62541-4:2015)

Architecture unifiée OPC - Partie 4: Services
(IEC 62541-4:2015)

OPC Unified Architecture - Teil 4: Dienste
(IEC 62541-4:2015)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 65E/375/CDV, future edition 2 of IEC 62541-4, prepared by SC 65E "Devices and integration in enterprise systems", of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62541-4:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-01-29
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-04-29

This document supersedes EN 62541-4:2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

Endorsement notice

The text of the International Standard IEC 62541-4:2015 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When 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.

Publication	Year	Title	EN/HD	Year
IEC/TR 62541-1	-	OPC unified architecture - Part 1: Overview and concepts	CLC/TR 62541-1	-
IEC/TR 62541-2	-	OPC unified architecture - Part 2: Security model	CLC/TR 62541-2	-
IEC 62541-3	-	OPC unified architecture - Part 3: Address Space Model	EN 62541-3	-
IEC 62541-5	-	OPC unified architecture - Part 5: Information Model	EN 62541-5	-
IEC 62541-6	-	OPC unified architecture - Part 6: Mappings	EN 62541-6	-
IEC 62541-7	-	OPC unified architecture - Part 7: Profiles	EN 62541-7	-
IEC 62541-8	-	OPC Unified Architecture - Part 8: Data Access	EN 62541-8	-
IEC 62541-11	-	OPC unified architecture - Part 11: Historical Access	EN 62541-11	-
IEC 62541-13	-	OPC unified architecture - Part 13: Aggregates	EN 62541-13	-

IEC 62541-4

Edition 2.0 2015-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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OPC Unified Architecture – Part 4: Services

Architecture Unifiée OPC – Partie 4: Services

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INTERNATIONAL STANDARD

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OPC Unified Architecture – Part 4: Services

Architecture Unifiée OPC – Partie 4: Services

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPC Unified Architecture –

Part 4: Services

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.
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International Standard IEC 62541-4 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 2011. This edition constitutes a technical revision.

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

a) Update for 6.4 Redundancy.
   Added non-transparent redundancy option HotAndMirrored and reworked most of the redundancy description.
b) Clarifications for Publish and Reconnect scenarios.
   Reworked different parts of the specificaiton to make sure no data is lost during short communication interruptions and clients can always detect for how long they lost

information during connection interuption. Added new clause 6.5 Re-establishing connections that describes the exact reconnect sequence for clients loosing connection to a server. Changed the minimum requirement for the retransmission queue of sent NotificationMessages from one keep-alive interval to minimum two times the minimum number of Publish requests per Session. Added clarification in which data value the overflow bit is set depending on the discard oldest setting. Changed discard handling for discardOldest is FALSE. The new value is replacing the last value put into the queue for FALSE. Added exception that the overflow bit is not set if the queue size one.

c) Handling of MonitoredItem changes in short network interruption scenarios.
Added new method GetMonitoredItems in Part 5. This method can be used to get the list of monitored items in a subscription if CreateMonitoredItems failed due to a network interruption and the client does not know if the creation succeeded in the server.

d) Update for 6.1.3 Determining if a Certificate is Trusted
Revised rules for certificate validation.

e) Revised definition of parameters semaphoreFile and isOnline in Service RegisterServer

f) Services ModifySubscription and ModifyMonitoredItems
Clarified that changes are applied directly and will take effect as soon as practical but not later than twice the new time interval.

g) There is a long list of minor changes to eliminate ambiguity.

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

CDV	Report on voting
65E/375/CDV	65E/403/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.

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 publication using a colour printer.

OPC Unified Architecture –

Part 4: Services

1 Scope

This part of IEC 62541 defines the OPC Unified Architecture (OPC UA) *Services*. The *Services* described are the collection of abstract Remote Procedure Calls (RPC) that are implemented by OPC UA *Servers* and called by OPC UA *Clients*. All interactions between OPC UA *Clients* and *Servers* occur via these *Services*. The defined *Services* are considered abstract because no particular RPC mechanism for implementation is defined in this part. IEC 62541-6 specifies one or more concrete mappings supported for implementation. For example, one mapping in IEC 62541-6 is to XML Web Services. In that case the *Services* described in this part appear as the Web service methods in the WSDL contract.

Not all OPC UA *Servers* will need to implement all of the defined *Services*. IEC 62541-7 defines the *Profiles* that dictate which Services need to be implemented in order to be compliant with a particular *Profile*.

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

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

IEC 62541-7, *OPC unified architecture – Part 7: Profiles*

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

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

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