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SINGAPORE STANDARD

OPC unified architecture

– Part 4 : Services



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(ICS 25.040.40; 35.100)

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National Foreword

This Singapore Standard was prepared by the Working Group on Smart Manufacturing Readiness Level set up by the Technical Committee on Smart Manufacturing under the purview of the MSC.

This standard is identical with IEC 62541-4:2015, "OPC unified architecture – Part 4: Services", published by the International Electrotechnical Commission.

NOTE 1 – Reference to International Standards are replaced by applicable Singapore Standards and Technical References.

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OPC UNIFIED ARCHITECTURE –

Part 4: Services

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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 specification to make sure no data is lost during short communication interruptions and clients can always detect for how long they lost information during connection interruption. Added new clause 6.5 Re-establishing connections that describes the exact reconnect sequence for clients losing 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*