

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**OPC unified architecture –  
Part 14: PubSub**

**Architecture unifiée OPC –  
Partie 14: PubSub**



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**Architecture unifiée OPC –  
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**Part 14: PubSub****FOREWORD**

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The *italicized terms and names* are also, 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.

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## OPC UNIFIED ARCHITECTURE –

### Part 14: PubSub

#### 1 Scope

This part of IEC 62541 defines the OPC Unified Architecture (OPC UA) *PubSub* communication model. It defines an OPC UA publish subscribe pattern which complements the client server pattern defined by the *Services* in IEC 62541-4. IEC TR 62541-1 gives an overview of the two models and their distinct uses.

*PubSub* allows the distribution of data and events from an OPC UA information source to interested observers inside a device network as well as in IT and analytics cloud systems.

This document consists of

- a general introduction of the *PubSub* concepts,
- a definition of the *PubSub* configuration parameters,
- mapping of *PubSub* concepts and configuration parameters to messages and transport protocols, and
- a *PubSub* configuration model.

Not all OPC UA *Applications* will need to implement all defined message and transport protocol mappings. IEC 62541-7 defines the *Profile* that dictates which mappings need to be implemented in order to be compliant with a particular *Profile*.

#### 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 62541-7, *OPC Unified Architecture – Part 7: Profiles*

IEC 62541-8, *OPC Unified Architecture – Part 8: Data Access*

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

ISO/IEC 19464:2014, *Advanced Message Queuing Protocol (AMQP) v1.0 specification*

ISO/IEC 20922:2016, *Message Queuing Telemetry Transport (MQTT) v3.1.1*

IETF RFC 7159, *The JavaScript Object Notation (JSON) Data Interchange Format*  
<http://www.ietf.org/rfc/rfc7159.txt>

### 3 Terms, definitions and abbreviated terms

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TR 62541-1, IEC 62541-3, and IEC 62541-4 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

##### 3.1.1

#### **DataSetClass**

template declaring the content of a *DataSet*

Note 1 to entry: A *DataSetClass* is used to type *DataSets* for use in several *Publishers* and for filtering in *Subscribers*.

##### 3.1.2

#### **DataSetMetaData**

data describing the content and semantic of a *DataSet*

##### 3.1.3

#### **DataSetReader**

entity receiving *DataSetMessages* from a *Message Oriented Middleware*

Note 1 to entry: A *DataSetReader* is the component that extracts a *DataSetMessage* from a *NetworkMessage* received from the *Message Oriented Middleware* and decodes the *DataSetMessage* to a *DataSet* for further processing in the *Subscriber*.

##### 3.1.4

#### **DataSetWriter**

entity creating *DataSetMessages* from *DataSets* and publishing them through a *Message Oriented Middleware*

Note 1 to entry: A *DataSetWriter* encodes a *DataSet* to a *DataSetMessage* and includes the *DataSetMessage* into a *NetworkMessage* for publishing through a *Message Oriented Middleware*.

##### 3.1.5

#### **PublishedDataSet**

configuration of application-data to be published as a *DataSet*

Note 1 to entry: A *PublishedDataSet* can be a list of monitored *Variables* or an *Event* selection.

##### 3.1.6

#### **SecurityGroup**

grouping of security settings and security keys used to access messages from a *Publisher*

Note 1 to entry: A *SecurityGroup* is an abstraction that represents the security settings and security keys that can be used to access messages from a *Publisher*. A *SecurityGroup* is identified with a unique identifier called the *SecurityGroupId*. The *SecurityGroupId* is unique within the *Security Key Service*.