IEC PAS 62264-6

Edition 1.0 2016-07

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

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Enterprise-control system integration –
Part 6: Messaging Service Model

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Enterprise-control system integration –
Part 6: Messaging Service Model

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CONTENTS

FOREWORD....6
INTRODUCTION....8
1 Scope....10
2 Normative references....10
3 Terms, definitions and abbreviations....10
3.1 Terms and definitions....10
3.2 Abbreviations....11
3.3 Conventions....12
4 The Messaging Service Model....12
4.1 Interface model....12
4.2 Application to application data exchange....12
4.3 Transaction model....14
4.4 Communicating applications....14
4.5 Managed communication channels....15
4.6 Notification services....16
4.7 MSM channel services....16
4.8 MSM publication channel services....17
4.8.1 Publication channel services....17
4.9 MSM request channel services....18
4.9.1 Request services....18
5 Methods of operation of MSM channels....18
5.1 Channel and topic identification....18
5.2 Channel names and hierarchy....18
5.2.1 Channel names....18
5.2.2 Channel name hierarchy....19
5.2.3 MSM root....19
5.2.4 Channel scope....19
5.2.5 Information scope....19
5.2.6 Channel use....20
5.3 Message filtering....21
5.4 Publication expiration....21
5.5 Topics....22
5.5.1 Topic definition....22
5.5.2 Standard topics....22
5.6 MSM sessions....23
5.7 Security....23
5.7.1 Secure message exchanges....23
5.7.2 Security tokens on channels....23
5.7.3 Security token format....24
5.7.4 MSM service provider implementations....24
6 MSM service definitions....24
6.1 Type definitions....24
6.2 MSM service returns and faults....25
6.3 MSM channel management services....26
6.3.1 Create channel....26
6.3.2 Add security tokens....26

This document is a preview generated by EVS

6.3.3 Remove security tokens 26
6.3.4 Delete channel 27
6.3.5 Get channel 27
6.3.6 Get channels 28
6.4 Notify listener service 28
6.4.1 Notify listener 28
6.5 MSM provider publication services 28
6.5.1 Open publication session 28
6.5.2 Post publication 29
6.5.3 Expire publication 29
6.5.4 Close publication session 30
6.6 MSM consumer publication services 30
6.6.1 Open subscription session 30
6.6.2 Read publication 30
6.6.3 Remove publication 31
6.6.4 Close subscription session 31
6.7 MSM provider request services 32
6.7.1 Open provider request session 32
6.7.2 Read request 32
6.7.3 Remove request 32
6.7.4 Post response 33
6.7.5 Close provider request session 33
6.8 MSM consumer request services 34
6.8.1 Open consumer request session 34
6.8.2 Post request 34
6.8.3 Read response 34
6.8.4 Remove response 35
6.8.5 Close consumer request session 35
7 Scenarios 36
7.1 Publish-subscribe scenarios 36
7.1.1 Simple publish-subscribe scenario 36
7.1.2 Publish-subscribe scenario with multiple messages 36
7.1.3 Publish-subscribe scenario without notification 37
7.1.4 Multiple publishers scenario 38
7.1.5 Publish-subscribe scenario with publication expiration 39
7.2 Request channel scenarios 40
7.2.1 Request-response scenario with notification 40
7.2.2 Request-response scenario without notification 41
7.2.3 Multiple providers 42
8 Compliance 43
Annex A (informative) MSM service provider considerations 44
A.1 Service provider considerations 44
A.2 Notification 44
A.3 Security considerations 44
A.4 MSM application implementation considerations 44
A.5 MSM channel security considerations 44
A.6 MSM session ID considerations 45
A.7 Data format validation 45
A.8 Allowed application checking 45

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A.9 Data exchange logging 45
A.10 Common error handling 45
A.11 Data transformation services 45
A.12 Cross company bridges 46
A.13 Message maintenance 47
Annex B (informative) Enterprise Service Buses 48
Bibliography 50

Figure 1 – Steps in application-to-application communication 9
Figure 2 – Application communication stack 13
Figure 3 – Defined standards at each level 14
Figure 4 – Messaging service model names 15
Figure 5 – MSM channel management services 17
Figure 6 – MSM publication channel services 17
Figure 7 – Services for request/response 18
Figure 8 – Changes and checkpoint channel example 21
Figure 9 – Security of channels 24
Figure 10 – Publication scenario with notification 36
Figure 11 – Publication scenario with multiple messages 37
Figure 12 – Publication scenario without notification 38
Figure 13 – Publication scenario with multiple provider applications 39
Figure 14 – Publication scenario with expired publications 40
Figure 15 – GET/SHOW request service scenario 41
Figure 16 – CHANGE / RESPONSE request service scenario 42
Figure 17 – Multiple providers CHANGE/RESPONSE scenario 43
Figure A.1 – Transformation services with the MSM service provider 46
Figure A.2 – Cross company bridge between multiple MSMs 47
Figure B.1 – Standard interface to ESBs and other message exchange systems 49

Table 1 – MSM type definitions 25
Table 2 – MSM service returns and fault definitions 25
Table 3 – Create channel 26
Table 4 – Add security token 26
Table 5 – Remove security token 27
Table 6 – Delete channel 27
Table 7 – Get channel 27
Table 8 – Get channels 28
Table 9 – Notify listener 28
Table 10 – Open publication session 29
Table 11 – Post publication 29
Table 12 – Expire publication 29
Table 13 – Close publication session 30
Table 14 – Open subscription session 30
Table 15 – Read publication 31

This document is a preview generated by EVS

Table 16 – Remove publication 31
Table 17 – Close subscription session 31
Table 18 – Open provider request session 32
Table 19 – Read request 32
Table 20 – Remove request 33
Table 21 – Post response 33
Table 22 – Close provider request session 33
Table 23 – Open consumer request session 34
Table 24 – Post request 34
Table 25 – Read response 35
Table 26 – Remove response 35
Table 27 – Close consumer request session 35

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ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 6: Messaging Service Model

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The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
65E/476/PAS	65E/502/RVD

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INTRODUCTION

This PAS is based on the use of ISA-95 object models defined in ISA-95 Parts 2, 4 and 5 (Parts 1 and 3 do not contain object models) to define a set of services that may be used to exchange information messages. It is recognized that other, non-Part 6 sets of services are possible and are not deemed invalid as a result of this PAS. This PAS defines a Messaging Service Model (MSM) for exchanging data exchange messages in a publish/subscribe mode and a request/response mode. It defines a minimal interface subset to message exchange systems.

The Messaging Service Model provides a method for applications to send and receive messages from MSM service providers without regard to the underlying communication mechanism, as part of a complete application-to-application communication protocol.

This PAS defines a set of services definitions that are designed to provide the functionality needed for a vendor-independent method for sending and receiving data exchange messages on a message exchange system, such as an Enterprise Service Bus (ESB).

The knowledge requirements to interface to just one message exchange system can be immense, and are usually not transferable to a different system. MSM defines a single interface, independent of the underlying services, for Level 3-3 and Level 4-3 communications. This removes the need for vendors to build custom interface after custom interface, and for end users to get locked into a single vendor because their investment prevents them from reusing any of the integration efforts.

Enterprise-control system integration involves multiple different steps to exchange data between different computer system applications, as shown in Figure 1.

a) The applications usually have different internal representations of exchanged objects in their own local data stores. This representation is usually converted from the local format to a commonly accepted global format. The ISA-95 Part 2 standard defines representations of a global format for Level 4-3 data exchanges. The Part 4 standard defines representations of a global format for Level 3-3 data exchanges. This conversion, from local to global and global to local, is usually performed twice for any two-way communications.

   EXAMPLE 1 Assume two applications, ALPHA and BETA: the ALPHA application initiates a data exchange with the BETA application, and BETA responds back to ALPHA. The format conversions are: ALPHA's local format to global format for the request data, global format to BETA's local format for the request data, BETA's local format to global format for the response data, and global format to ALPHA's format for the response data.

b) Conversion is performed to align the namespaces among the exchanging applications, and is usually performed four times for any two-way communications.

   EXAMPLE 2 Names for elements of data may be codes, tag names, or equipment identifiers.

   EXAMPLE 3 Data which are represented in one element namespace, such as codes 1,2,3,4, may have a different namespace in another application, such as codes Ok, Done, Error, Delay.

c) Once information is in the global format with appropriate global names, the exchanged information is sent from one application to another application.

d) Messages are transported from one application to another, either within the same computer environment or across computers. Transport mechanisms are defined in other standards, such as TCP/IP and Ethernet standards.

e) When data exchange information is received, there are specific rules that define what resultant data are to be returned. The transaction rules are defined in the ISA-95 Part 5 standard.

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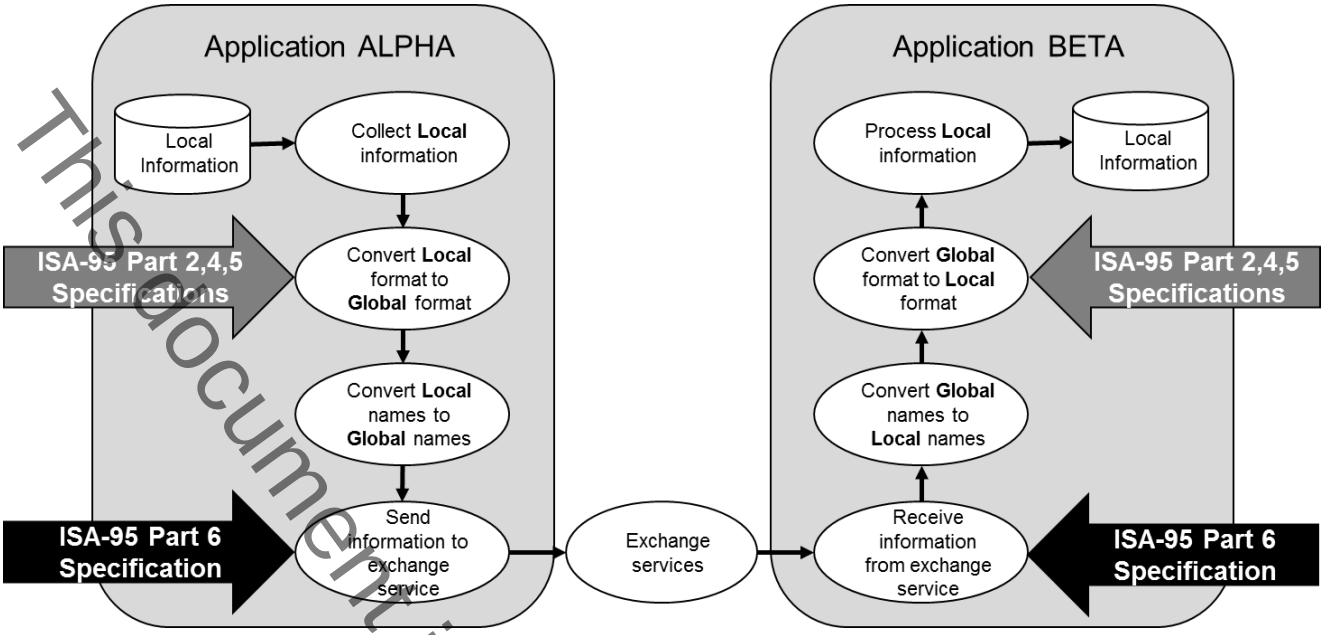

Figure 1 – Steps in application-to-application communication

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ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 6: Messaging Service Model

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1 Scope

This part of IEC 62264, which is a PAS, defines a model of a set of messaging services for information exchanges across Levels 3 and 4, and within Level 3, between applications performing business and manufacturing activities. It defines a standard interface for information exchange between systems.

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.

ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), *Enterprise-Control System Integration – Part 1: Models and Terminology*

ANSI/ISA-95.00.02-2010 (IEC 62264-2 Mod), *Enterprise-Control System Integration – Part 2: Object Model Attributes*

ANSI/ISA-95.00.04-2012, *Enterprise-Control System Integration – Part 4: Objects and Attributes for Manufacturing Operations Management Integration*

ANSI/ISA-95.00.05-2013, *Enterprise-Control System Integration – Part 5: Business-to-Manufacturing Transactions*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions 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
channel description
text that describes a channel

3.1.2
channel type
primary use of a channel for publications or requests

3.1.3
channel URI
primary identifier for a channel