

**Application integration at electric utilities - System
interfaces for distribution management -- Part 100:
Implementation profiles**

EESTI STANDARDI EESSÕNA

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**Application integration at electric utilities -
System interfaces for distribution management -
Part 100: Implementation profiles
(IEC 61968-100:2013)**

Intégration d'applications pour les services
électriques - Interfaces système pour la
gestion de distribution -
Partie 100: Profils de mise en œuvre
(CEI 61968-100:2013)

Integration von Anwendungen in Anlagen
der Elektrizitätsversorgung -
Systemschnittstellen für Netzführung -
Teil 100: Implementations-Profile
(IEC 61968-100:2013)

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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 57/1358/FDIS, future edition 1 of IEC 61968-100, prepared by IEC/TC 57, "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61968-100:2013.

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) 2014-05-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-08-30

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The text of the International Standard IEC 61968-100:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61968-9	NOTE	Harmonised as EN 61968-9.
IEC 61968-13	NOTE	Harmonised as EN 61968-13.
IEC 61970-452	NOTE	Harmonised as EN 61970-452.
IEC 61970-453	NOTE	Harmonised as EN 61970-453.
IEC 62361-100	NOTE	Harmonised as EN 62361-100.

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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-300	-	International Electrotechnical Vocabulary - Electrical and electronic measurements and measuring instruments - Part 311: General terms relating to measurements - Part 312: General terms relating to electrical measurements - Part 313: Types of electrical measuring instruments - Part 314: Specific terms according to the type of instrument	-	-
IEC 61968-1	-	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general requirements	EN 61968-1	-
IEC/TS 61968-2	-	Application integration at electric utilities - System interfaces for distribution management - Part 2: Glossary	-	-
IEC 61968-11	-	Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution	EN 61968-11	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN 61970-301 ¹⁾	-
IEC 61970-552	-	Energy Management System Application Program Interface (EMS-API) - Part 552: CIMXML Model Exchange Format	EN 61970-552 ¹⁾	-
ISO 8601	-	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-

¹⁾ At draft stage.

CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative References	10
3 Terms, definitions and abbreviations	10
3.1 Terms and definitions	10
3.2 Abbreviations	10
3.3 Terminology for common integration technologies	11
3.3.1 General	11
3.3.2 Enterprise Service Bus (ESB).....	12
3.3.3 Java Messaging Service (JMS).....	12
3.3.4 Service-Oriented Architecture (SOA)	12
3.3.5 Event-Driven Architecture (EDA)	12
3.3.6 Simple Object Access Protocol (SOAP)	12
3.3.7 Web Services (WS)	13
3.3.8 Web Services Definition Language (WSDL)	13
3.3.9 XML Schema (XSD).....	13
3.3.10 Representational State Transfer (REST).....	14
3.3.11 Queue	14
3.3.12 Topic	14
3.3.13 Message Destination	14
3.3.14 Request.....	14
3.3.15 Response	14
3.3.16 Query	15
3.3.17 Transaction	15
3.3.18 Event.....	15
4 Use Cases.....	15
4.1 General	15
4.2 Simple request/reply.....	16
4.3 Request/reply using an ESB	16
4.4 Events.....	17
4.5 Transactions	18
4.6 Callback	19
4.7 Adapters.....	20
4.8 Complex messaging	21
4.9 Orchestration	22
4.10 Application-level use cases	22
5 Integration Patterns	23
5.1 General	23
5.2 Client and server perspectives	23
5.2.1 General	23
5.2.2 Basic web service pattern	24
5.2.3 Basic JMS request/reply pattern	24
5.2.4 Event listeners.....	26
5.2.5 Asynchronous request/reply pattern.....	27
5.3 Bus perspective.....	27

5.3.1	General	27
5.3.2	ESB messaging pattern using JMS	28
5.3.3	ESB messaging patterns using web service request	29
5.3.4	ESB request handling to web service	29
5.3.5	ESB request handling via adapter	30
5.3.6	Custom integration patterns	31
6	Message organization	32
6.1	General	32
6.2	IEC 61968 messages	32
6.2.1	General	32
6.2.2	Verbs	33
6.2.3	Nouns	34
6.2.4	Payloads	35
6.3	Common message envelope	36
6.3.1	General	36
6.3.2	Message header structure	37
6.3.3	Request message structures	40
6.3.4	Response Message Structures	43
6.3.5	Event message structures	48
6.3.6	Fault message structures	49
6.4	Payload structures	50
6.5	Strongly-typed payloads	53
6.6	SOAP message envelope	54
6.7	Request processing	55
6.8	Event processing	56
6.9	Message correlation	57
6.10	Complex transaction processing using OperationSet	57
6.10.1	General	57
6.10.2	OperationSet Element	59
6.10.3	Patterns	61
6.10.4	OperationSet example	63
6.11	Representation of time	65
6.12	Other conventions and best practices	65
6.13	Technical interoperability	65
6.14	Service level agreements	66
6.15	Auditing, monitoring and management	66
7	Payload specifications	66
8	Interface specifications	70
8.1	General	70
8.2	Application-level specifications	70
8.3	Web service interfaces	72
8.3.1	General	72
8.3.2	WSDL Structure	72
8.3.3	Document style SOAP binding	73
8.3.4	Strongly-typed web services	74
8.4	JMS	76
8.4.1	General	76
8.4.2	Topic and queue naming	77
8.4.3	JMS message fields	78

9	Security	78
10	Version control	79
	Annex A (normative) XML schema for common message envelope	81
	Annex B (normative) Verbs	91
	Annex C (normative) Procedure for strongly typed WSDL generation	93
	Annex D (normative) Generic WSDL	106
	Annex E (informative) AMQP	108
	Annex F (informative) Payload Compression Example	109
	Annex G (informative) XMPP	111
	Bibliography	112
	Figure 1 – Overview of Scope	9
	Figure 2 – Simple Request/Reply	16
	Figure 3 – Request/reply using intermediaries	17
	Figure 4 – Events	18
	Figure 5 – Point-to-Point (One Way) Pattern	19
	Figure 6 – Transaction Example	19
	Figure 7 – Callbacks	20
	Figure 8 – Use of Adapters	21
	Figure 9 – Complex messaging	22
	Figure 10 – Application-level use case example	23
	Figure 11 – Basic request/reply using web services	24
	Figure 12 – Basic request/reply using JMS	25
	Figure 13 – Event listeners using JMS	26
	Figure 14 – Asynchronous request/reply pattern	27
	Figure 15 – ESB content-based routing	28
	Figure 16 – ESB with smart proxy and content-based routing	29
	Figure 17 – ESB with proxies, routers and adapters	30
	Figure 18 – ESB Integration to non-compliant resources	31
	Figure 19 – Messaging between clients, servers and an ESB	33
	Figure 20 – Example payload schema	35
	Figure 21 – Common message envelope	37
	Figure 22 – Common message header structure	39
	Figure 23 – Request message structure	41
	Figure 24 – XML for example RequestMessage	42
	Figure 25 – Example 'Get<Noun>' profile	43
	Figure 26 – ResponseMessage structure	44
	Figure 27 – Reply message states	45
	Figure 28 – Error structure	46
	Figure 29 – XML for example ResponseMessage	47
	Figure 30 – XML example of payload compression	47
	Figure 31 – XML example for error ResponseMessage	48
	Figure 32 – EventMessage structure	48

Figure 33 – XML example for EventMessage	49
Figure 34 – Fault message structure	50
Figure 35 – Message payload container – Generic.....	51
Figure 36 – Message payload container – Type specific example	54
Figure 37 – SOAP bindings	54
Figure 38 – SOAP envelope example for strong typing	55
Figure 39 – Message OperationSet Element	58
Figure 40 – OperationSet details.....	60
Figure 41 – Transactional Request/Response (non-OperationSet)	61
Figure 42 – Published events (non-OperationSet)	62
Figure 43 – Transactional Request/Response (OperationSet)	62
Figure 44 – Published event (OperationSet).....	63
Figure 45 – Information Models, Profiles and Messages	67
Figure 46 – Contextual Profile Design in CIMTool	67
Figure 47 – Example message payload schema.....	68
Figure 48 – Example payload XML schema.....	69
Figure 49 – Example message XML	70
Figure 50 – Example complex business process	72
Figure 51 – WSDL structure	73
Figure 52 – Web service usage example	76
Figure 53 – Example Organization of Topics and Queues	77
Figure C.1 – Process for WSDL Generation	93
Figure C.2 –Example sequence diagram	94
Figure C.3 – WSDL folder structure	94
Figure C.4 – WSDL type definitions	95
Figure D.1 – Generic WSDL structure	106
Table 1 – Verbs and their Usage.....	34
Table 2 – Payload usages.....	53
Table B.1 – Normative definitions of verbs	91

INTRODUCTION

This part of IEC 61968 defines a set of implementation profiles for IEC 61968 using technologies commonly used for enterprise integration. More specifically, this document describes how message payloads defined by parts 3-9 of IEC 61968 are conveyed using web services and the Java Messaging System. Guidance is also provided with respect to the use of Enterprise service Bus (ESB) technologies. The goal is to provide details that would be sufficient to enable implementations of IEC 61968 to be interoperable. In addition, this document is intended to describe integration patterns and methodologies that can be leveraged using current and future integration technologies.

The IEC 61968 series of standards is intended to facilitate *inter-application integration* as opposed to *intra-application integration*. Intra-application integration is aimed at programs in the same application system, usually communicating with each other using middleware that is embedded in their underlying runtime environment, and tends to be optimised for close, real-time, synchronous connections and interactive request/reply or conversation communication models. IEC 61968, by contrast, is intended to support the inter-application integration of a utility enterprise that needs to connect disparate applications that are already built or new (legacy or purchased applications), each supported by dissimilar runtime environments. Therefore, these interface standards are relevant to loosely coupled applications with more heterogeneity in languages, operating systems, protocols and management tools. This series of standards, which are intended to be implemented with middleware services that exchange messages among applications, will complement, not replace utility data warehouses, database gateways, and operational stores.

This standard is based upon the EPRI Technical Report 1018795 and other contributed works.

The IEC 61968 series, taken as a whole, defines interfaces for the major elements of an interface architecture for distribution systems within a utility enterprise. Part 1: Interface Architecture and General Recommendations, identifies and establishes requirements for standard interfaces based on an Interface Reference Model (IRM). Parts 3 through 9 of IEC 61968 define interfaces relevant to each of the major business functions described by the Interface Reference Model.

As described in IEC 61968, there are a variety of distributed application components used by the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping, meter reading, meter control and facilities management. This set of standards is limited to the definition of interfaces and is implementation independent. It provides for interoperability among different computer systems, platforms, and programming languages. Methods and technologies used to implement functionality conforming to these interfaces are considered outside of the scope of these standards; only the interface itself is specified in these standards.

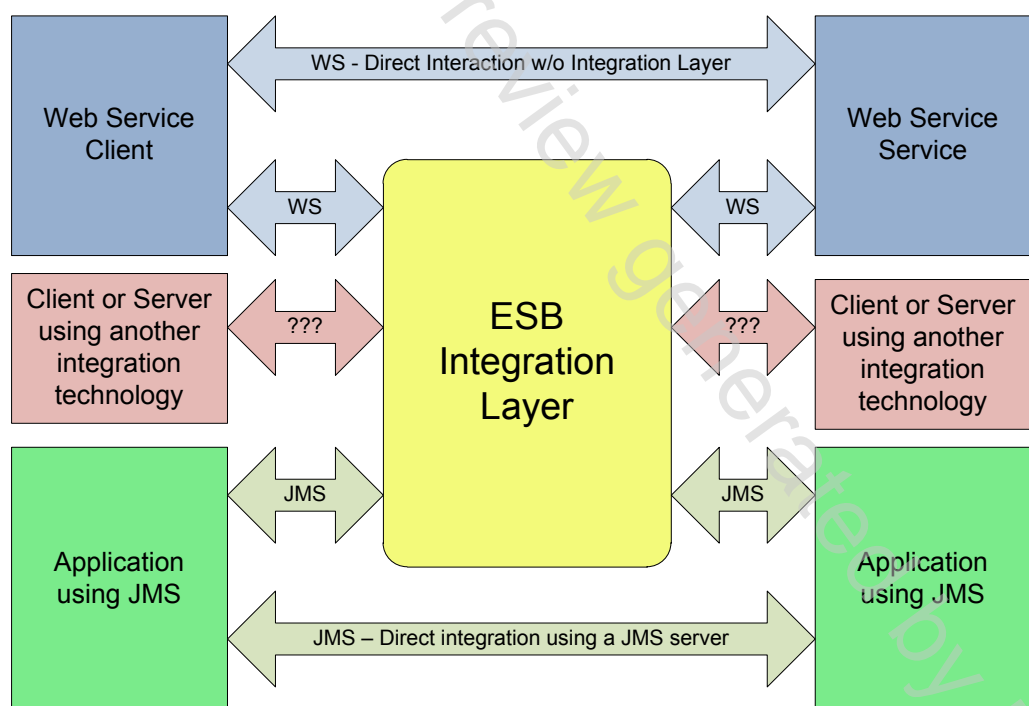
APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 100: Implementation profiles

1 Scope

This part of IEC 61968 specifies an implementation profile for the application of the other parts of IEC 61968 using common integration technologies, including JMS and web services. This International Standard also provides guidance with respect to the use of Enterprise Service Bus (ESB) technologies. This provides a means to derive interoperable implementations of IEC 61968-3 to IEC 61968-9. At the same time, this International Standard can be leveraged beyond information exchanges defined by IEC 61968, such as for the integration of market systems or general enterprise integration.

Figure 1 attempts to provide an overview of scope, where IEC 61968 compliant messages are conveyed using web services or JMS. Through the use of an ESB integration layer, the initiator of an information exchange could use web services, where the receiver could use JMS, and vice versa. The integration layer also provides support for one to many information exchanges using publish/subscribe integration patterns and key functionality such as delivery guarantees.



IEC 1769/13

Figure 1 – Overview of Scope

The scope of this document specifically includes the following:

- integration patterns that support IEC 61968 information exchanges
- design of interfaces for use of strongly typed web services
- design of interfaces for use of generically typed web services
- design of interfaces using JMS

- definition of standard design artefacts and related templates
- recognition that technologies other than JMS and web services may be used for integration leveraging this standard (with some specific examples and associated recommendations described in appendices)

This profile can also be applied to integration problems outside the scope of IEC 61968.

It is important to note that other implementation profiles can potentially be defined for IEC 61968, and that this is not intended to be the only possible implementation profile. In addition, this profile can be adapted to meet specific needs of specific integration projects.

It is also not within the scope of this document to prescribe those implementation details as required for security.

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 60050-300, *International Electrotechnical Vocabulary – Electrical and electronic measurements and measuring instruments – Part 311: General terms relating to measurements – Part 312: General terms relating to electrical measurements – Part 313: Types of electrical measuring instruments – Part 314: Specific terms according to the type of instrument*

IEC 61968-1, *Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general recommendations*

IEC/TS 61968-2, *Application integration at electric utilities – System interfaces for distribution management – Part 2: Glossary*

IEC 61968-11, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common information model (CIM) extensions for distribution*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*

IEC 61970-552, *Energy management system application program interface (EMS-API) – Part 552: CIM XML Model Exchange Format*

ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this specification, the terms and definitions given in IEC 60050-300, IEC/TS 61968-2, IEC 62051, IEC 62055-31 apply.

3.2 Abbreviations

The following terms and abbreviations are used within this document: