

**Application integration at electric utilities - System
interfaces for distribution management - Part 11:
Common Information Model (CIM) extensions for
distribution**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61968-11:2010 sisaldab Euroopa standardi EN 61968-11:2010 ingliskeelset teksti.

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**Application integration at electric utilities -
System interfaces for distribution management -
Part 11: Common information model (CIM) extensions for distribution
(IEC 61968-11:2010)**

Intégration d'applications pour
les compagnies d'électricité – Interfaces
système pour la gestion de la distribution -
Partie 11 : Extensions du modèle commun
d'information (CIM) pour
la distribution
(CEI 61968-11:2010)

Integration von Anwendungen in Anlagen
der Elektrizitätsversorgung -
Systemschnittstellen für Netzführung -
Teil 11: Erweiterungen des allgemeinen
Informationsmodells (CIM)
für die Verteilung
(IEC 61968-11:2010)

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

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Foreword

The text of document 57/1058/FDIS, future edition 1 of IEC 61968-11, prepared by IEC TC 57, Power systems management and associated information exchange, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61968-11 on 2010-09-01.

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The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
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- latest date by which the national standards conflicting
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Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60968-11:2010 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 61968-3	NOTE Harmonized as EN 61968-3.
IEC 61968-4	NOTE Harmonized as EN 61968-4.
IEC 61968-9	NOTE Harmonized as EN 61968-9
IEC 61968-13	NOTE Harmonized as EN 61968-13

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

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 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 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN 61970-301	-
IEC 61970-501	-	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	EN 61970-501	-

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INTRODUCTION

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. 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 is intended to support applications that need to exchange data every few seconds, minutes, or hours rather than waiting for a nightly batch run. 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.

As used in IEC 61968, a distribution management system (DMS) consists of various distributed application components for 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 and facilities management. Standard interfaces are defined for each class of applications identified in the interface reference model (IRM), which is described in IEC 61968-1.

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

Part 11: Common information model (CIM) extensions for distribution

1 Scope

This International Standard specifies the distribution extensions of the Common Information Model (CIM) specified in IEC 61970-301. It defines a standard set of extensions of common information model (CIM), which support message definitions in Parts 3 to 9 of IEC 61968, IEC 61968-13 and IEC 61968-14¹⁾. The scope of this document is the information model that extends the base CIM for the needs of distribution networks, as well as for integration with enterprise-wide information systems typically used within electrical utilities. The information model is defined in UML which is platform-independent and electronically processable language that is then used to create message payload definitions in different required formats. In this way, this standard will not be impacted by the specification, development and/or deployment of next generation infrastructures, either through the use of standards or proprietary means.

For the purposes of this document, the distribution CIM (DCIM) model refers to the IEC TC 57 CIM model as defined by IEC 61970-301 and IEC 61968-11 (this document).

The Common Information Model (CIM) is an abstract model of the major objects in an electric utility enterprise typically involved in utility operations. By providing a standard way of representing power system resources as object classes and attributes, along with their relationships, the CIM facilitates the integration of software applications developed independently by different vendors. The CIM facilitates integration by defining a common language (i.e., semantics and syntax) based on the CIM to enable these applications or systems to access public data and exchange information independent of how such information is represented internally.

IEC 61970-301 defines a core CIM for Energy Management System (EMS) applications, including many classes that would be useful in a wider variety of applications. Due to its size, the CIM classes are grouped into logical Packages, and collections of these packages are maintained as separate International Standards. This document extends the core CIM with packages that focus on Distribution Management Systems (DMS) including Assets, Work, Customers, Load Control, Metering, and others. IEC 61970-302²⁾ extends the CIM with packages that focus on Financial, Energy Scheduling, Reservation, and other market-related applications. Other CIM extensions may be published as International Standards, each maintained by a separate group of domain experts. Depending on a project's needs, the integration of applications may require classes and packages from one or more of the CIM standards.

1) IEC 61968-5, IEC 61968-6, IEC 61968-7, IEC 61968-8 and IEC 61968-14 are under consideration.

2) Under consideration.

2 Normative references

The following referenced documents are indispensable for the application 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 61968-1, *Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general requirements*

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

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

IEC 61970-501, *Energy management system application program interface (EMS-API) – Part 501: Common Information Model Resource Description Framework (CIM RDF) schema*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61968-2 and the following apply.

NOTE Refer to International Electrotechnical Vocabulary, IEC 60050, for general glossary definitions.

3.1

energy management system

EMS

computer system comprising a software platform providing basic support services and a set of applications providing the functionality needed for the effective operation of electrical generation and transmission facilities so as to assure adequate security of energy supply at minimum cost

3.2

distribution management system

DMS

computer system comprising a software platform providing basic support services and a set of applications providing the functionality needed for the effective operation of electrical distribution facilities so as to assure adequate security of energy supply at minimum cost

3.3

unified modeling language

UML

formal and comprehensive descriptive language with diagramming techniques used to represent software systems, from requirements analysis, through design and implementation, to documentation

UML has evolved from a collection of methods contributed by different practitioners, into an International Standard. The CIM relies on UML for defining the model, and automated tools generate the documentation, schemas, and other artifacts directly from the UML. A basic understanding of UML is necessary to understand the CIM.

3.4

common information model with distribution extensions

DCIM

union of the core CIM in IEC 61970-301 and additional packages defined in this document, IEC 61968-11