

STN	Integrácia aplikácií v energetických spoločnostiach Systemové rozhrania na riadenie dodávky elektrickej energie Časť 3: Rozhranie pre prevádzku sietí	STN EN IEC 61968-3 33 4620
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Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for network operations

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/21

Obsahuje: EN IEC 61968-3:2021, IEC 61968-3:2021

Oznámením tejto normy sa od 01.06.2024 ruší
STN EN IEC 61968-3 (33 4620) zo septembra 2018

133314

EUROPEAN STANDARD

EN IEC 61968-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2021

ICS 33.200

Supersedes EN IEC 61968-3:2018 and all of its amendments and corrigenda (if any)

English Version

**Application integration at electric utilities - System interfaces for
distribution management - Part 3: Interface for network
operations
(IEC 61968-3:2021)**

Intégration d'applications pour les services électriques -
Interfaces système pour la gestion de la distribution - Partie
3: Interface pour l'exploitation du réseau
(IEC 61968-3:2021)

Integration von Anwendungen in Anlagen der
Elektrizitätsversorgung - Systemschnittstellen für
Netzführung - Teil 3: Schnittstelle für Netzbetriebsarten
(IEC 61968-3:2021)

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 61968-3:2021 (E)**European foreword**

The text of document 57/2343/FDIS, future edition 3 of IEC 61968-3, 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 IEC 61968-3:2021.

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-03-01
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IEC 61968-4	NOTE	Harmonized as EN IEC 61968-4
IEC 61968-5	NOTE	Harmonized as EN IEC 61968-5
IEC 61968-6	NOTE	Harmonized as EN 61968-6
IEC 61968-8	NOTE	Harmonized as EN 61968-8
IEC 61968-9	NOTE	Harmonized as EN 61968-9
IEC 61968-11	NOTE	Harmonized as EN 61968-11
IEC 61968-13	NOTE	Harmonized as EN IEC 61968-13
IEC 62361-100	NOTE	Harmonized as EN 62361-100

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<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 recommendations	EN IEC 61968-1	-
IEC/TS 61968-2	-	Application integration at electric utilities - System interfaces for distribution management - Part 2: Glossary	-	-
IEC 61968-100	-	Application integration at electric utilities - System interfaces for distribution management - Part 100: Implementation profiles	EN 61968-100	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN IEC 61970-301	-



IEC 61968-3

Edition 3.0 2021-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Application integration at electric utilities – System interfaces for distribution management –
Part 3: Interface for network operations**

**Intégration d'applications pour les services électriques – Interfaces système pour la gestion de la distribution –
Partie 3: Interface pour l'exploitation du réseau**

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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
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IEC 61968-3

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ICS 33.200

ISBN 978-2-8322-9596-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3: Interface for network operations

FOREWORD

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International standard IEC 61968-3 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This third edition cancels and replaces the second edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) major rework of Switch Order related profiles and Outage related profiles;
- b) documented profiles in more detail as a result of the analysis of end-to-end use cases;
- c) separated Measurement and Control profile into two profiles: PSRMeasurements and PSRControls;
- d) replaced Temporary Network Change profile with SwitchingEvents profile;

- e) added MeasurementAction, ControlAction, GenericAction and VerificationAction to SwitchingPlans profile. Added examples;
- f) added SwitchingActions profile to support the coordination of SwitchingPlan execution between control room and the field crew;
- g) added ClampAction to SwitchingPlan, SwitchingAction and SwitchingEvent profiles, to allow clamps to be placed and removed independently of jumpers;
- h) separated OutagesAndFaults profile into UnplannedOutages, PlannedOutages, EquipmentFaults, LineFaults;
- i) added list of energized and de-energized UsagePoints to the UnplannedOutages profile;
- j) added PlannedOutages profile;
- k) added PlannedOutageNotifications profile;
- l) added SwitchingPlanRequest profile to replace OutageSchedules profile;
- m) expanded TroubleOrders profile to include UnplannedOutages and TroubleTickets and to allow crews to be scheduled to individual tasks within the TroubleOrder;
- n) expanded use cases and sequence diagrams;
- o) sequence diagrams updated to use IEC 61968-100 message patterns;
- p) use cases in IEC 62559-2 use case template;
- q) added example XML for profiles;
- r) replaced xsd in Annex with tables to document the profiles in a serialisation-independent form;
- s) clarified FLISR use case to include interactions between DSO and TSO per review comments from Edition 2.
- t) removed OperationalTags since it is now part of the TagAction in the SwitchingEvents payload

The text of this International Standard is based on the following documents:

Draft	Report on voting
57/2343/FDIS	57/2364/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The language used for the development of this International Standard is English.

In this standard, the following print types are used:

- **tokens: in arial black type**

A list of all parts of the IEC 61968 series, under the general title: *Application integration at electric utilities – System interfaces for distribution management* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document 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 document using a colour printer.

INTRODUCTION

The purpose of this part of IEC 61968 is to define a standard for the integration of network operations systems with each other and other systems and business functions within the scope of IEC 61968. The specific details of the communication protocols those systems employ are outside the scope of this part of IEC 61968. Instead, this part of IEC 61968 will recognize and model the general capabilities that can be potentially provided by network operations systems. In this way, this part of IEC 61968 will not be impacted by the specification, development and/or deployment of next generation network operations systems, either through the use of standards or proprietary means.

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 inter-application 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 3: Interface for network operations

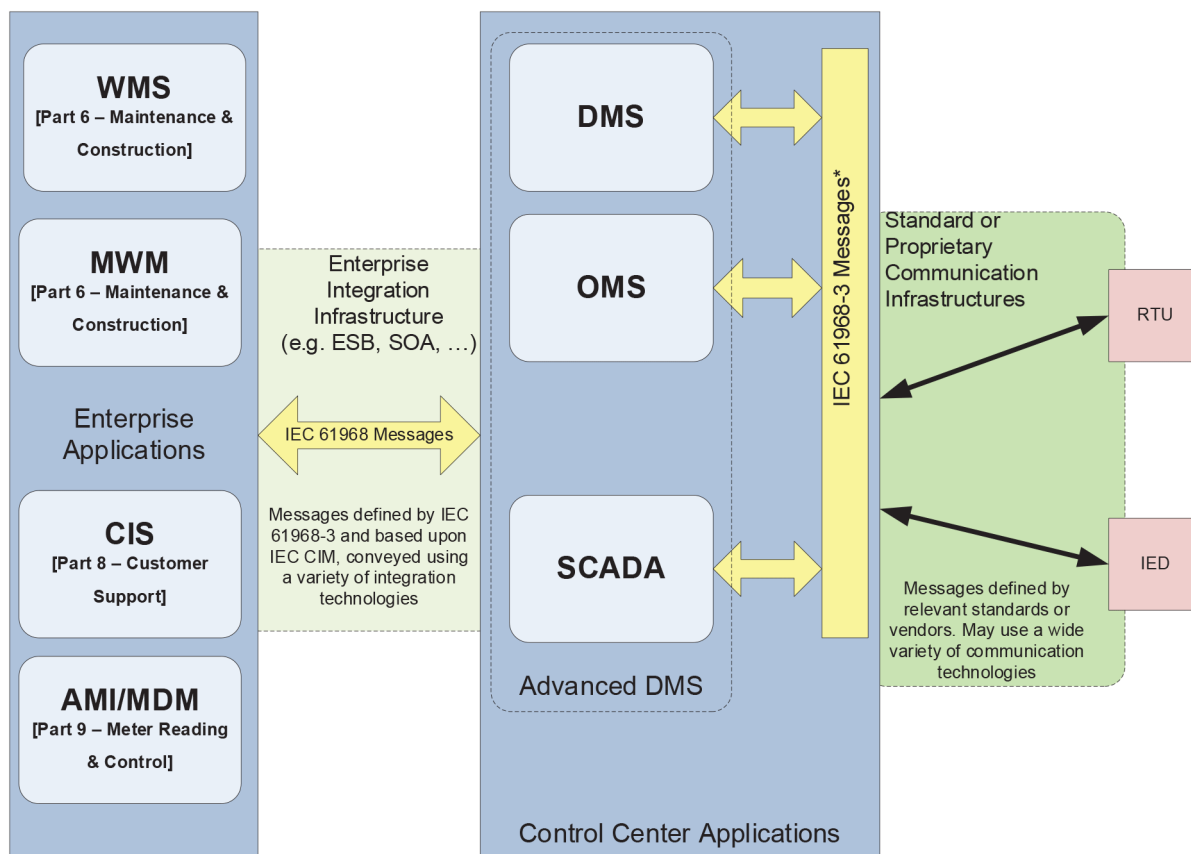
1 Scope

Per the IEC 61968 Interface Reference Model, the Network Operations function defined in this part of IEC 61968 provides utilities with the means to supervise main substation topology (breaker and switch state), feeder topology and control equipment status through SCADA, AMI and other data sources. It also provides the means for handling network connectivity and loading conditions. Finally, it makes it possible for utilities to locate customer telephone complaints and coordinate activities of field crews with respect to planned and unplanned outages.

IEC 61968-3 specifies the information content of a set of message payloads that can be used to support many of the business functions related to network operations. Typical uses of the message payloads defined in IEC 61968-3 include data acquisition by external systems, fault isolation, fault restoration, trouble management and coordination of the real-time state of the network.

The scope diagram shown in Figure 1 illustrates the possibility of implementing IEC 61968-3 functionality as either a single integrated advanced distribution management system or as a set of separate functions – OMS, DMS and SCADA. Utilities may choose to buy these systems from different vendors and integrate them using the IEC 61968-3 messages. Alternatively, a single vendor could provide two or all of these components as a single integrated system. In the case of more than one system being provided by the same vendor, the vendor may choose to use either extensions of the IEC 61968 messages or a proprietary integration mechanism to provide enhanced functionality over and above what is required/supported by the IEC 61968-3 specification. While this is a possible implementation, Subclause 4.3 defines the scope in terms of business functions that are implemented in common vendor offerings.

Annexes in this document detail integration scenarios or use cases, which are informative examples showing typical ways of using the message payloads defined in this document as well as message payloads to be defined in other parts of the IEC 61968 series.



* Note, that depending on the system configuration, these can also be proprietary interfaces (E.g. a system that covers DMS and SCADA in one product).

IEC

Figure 1 – IEC 61968-3 Scope

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 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 61968-100, *Application integration at electric utilities – System interfaces for distribution management – Part 100: Implementation profiles*

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

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