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Vorgesehen als Ersatz für
DIN EN 62769-3:2016-03**Feldgeräteintegration (FDI) –
Teil 3: FDI-Server
(IEC 65E/590/CDV:2018);
Englische Fassung prEN 62769-3:2018**Field Device Integration (FDI) –
Part 3: FDI Server
(IEC 65E/590/CDV:2018);
English version prEN 62769-3:2018Intégration des appareils de terrain (FDI) –
Partie 3: Serveur FDI
(IEC 65E/590/CDV:2018);
Version anglaise prEN 62769-3:2018**Anwendungswarnvermerk**

Dieser Norm-Entwurf mit Erscheinungsdatum 2019-04-12 wird der Öffentlichkeit zur Prüfung und Stellungnahme vorgelegt.

Weil die beabsichtigte Norm von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses Entwurfs besonders zu vereinbaren.

Stellungnahmen werden erbeten

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- oder in Papierform an die DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE, Stresemannallee 15, 60596 Frankfurt am Main.

Die Empfänger dieses Norm-Entwurfs werden gebeten, mit ihren Kommentaren jegliche relevanten Patentrechte, die sie kennen, mitzuteilen und unterstützende Dokumentationen zur Verfügung zu stellen.

Gesamtumfang 61 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE

Nationales Vorwort

Die Englische Fassung des europäischen Dokuments prEN 62769-3:2018 „Feldgeräteintegration (FDI) – Teil 3: FDI-Server“ (Entwurf in der Umfrage) ist unverändert in diesen Norm-Entwurf übernommen worden.

Die Internationale Elektrotechnische Kommission (IEC) und das Europäische Komitee für Elektrotechnische Normung (CENELEC) haben vereinbart, dass ein auf IEC-Ebene erarbeiteter Entwurf für eine Internationale Norm zeitgleich (parallel) bei IEC und CENELEC zur Umfrage (CDV-Stadium) und Abstimmung als FDIS (en: Final Draft International Standard) bzw. Schluss-Entwurf für eine Europäische Norm gestellt wird, um eine Beschleunigung und Straffung der Normungsarbeit zu erreichen. Dem entsprechend ist das internationale Dokument IEC 65E/590/CDV:2018 „Field Device Integration (FDI) – Part 3: FDI Server“ unverändert in den Entwurf prEN 62769-3:2018 übernommen worden.

Das internationale Dokument wurde vom SC 65E „Devices and integration in enterprise systems“ der Internationalen Elektrotechnischen Kommission (IEC) erarbeitet.

Bei der Abstimmung zu dem Europäischen Schluss-Entwurf bei CENELEC und dem Internationalen Schluss-Entwurf bei IEC [Final Draft International Standard (FDIS)] sind jeweils nur „JA/NEIN“-Entscheidungen möglich, wobei „NEIN“-Entscheidungen fundiert begründet werden müssen. Dokumente, die bei CENELEC als Europäische Norm angenommen und ratifiziert werden, sind unverändert als Deutsche Normen zu übernehmen.

Für dieses Dokument ist das nationale Arbeitsgremium K 956 „Industrielle Kommunikation“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

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Für den Fall einer datierten Verweisung im normativen Text bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe des Dokuments.

Der Zusammenhang der zitierten Dokumente mit den entsprechenden deutschen Dokumenten ergibt sich, soweit ein Zusammenhang besteht, grundsätzlich über die Nummer der entsprechenden IEC-Publikation. Beispiel: IEC 60068 ist als EN 60068 als Europäische Norm durch CENELEC übernommen und als DIN EN 60068 ins Deutsche Normenwerk aufgenommen.

Das Präsidium des DIN hat mit Präsidialbeschluss 1/2004 festgelegt, dass DIN-Normen, deren Inhalt sich auf internationale Arbeitsergebnisse der Informationsverarbeitung gründet, unter bestimmten Bedingungen allein in englischer Sprache veröffentlicht werden dürfen. Diese Bedingungen sind für den vorliegenden Normentwurf erfüllt.

Da sich die Benutzer der vorliegenden Normentwurfs der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der prEN 62769-3: 2018 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt, und Abschnitt 3, der die Begriffe festlegt, wurde eine Übersetzung angefertigt und als informativer Nationaler Anhang NA der vorliegenden Normentwurfs hinzugefügt. Für viele der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Dieser Normentwurf steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Es ist vorgesehen, auch bei der entsprechenden zukünftigen Deutschen Norm auf die deutsche Sprachfassung zu verzichten und diese in der englischsprachigen Fassung zu veröffentlichen.

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Änderungen

Gegenüber DIN EN 62769-3:2016-03 wurden folgende Änderungen vorgenommen:

- a) Unterstützung der allgemeinen Protokollerweiterung zur schnelleren Einführung anderer Technologien;
- b) Unterstützung von Package-Entwickler bei der Erstellung von EDDs für das heutige EDD-Basissystem mit einem einzigen Entwicklungswerkzeug;
- c) Die Digitale Signatur beinhaltet jetzt einen zuverlässigen Zeitstempel für die langfristige Validierung des FDI-Pakets;
- d) Laufende Benutzerschnittstellen-Plug-ins in einer Sandbox;
- e) Zeitstempel für die Signatur des Geräte-Package;
- f) Unterstützung neuer Protokolle;
- g) Allgemeine Protokollerweiterung zur Einführung von anderen Kommunikationsprotokollen;
- h) Basierend auf die allgemeine Protokollerweiterung: Modbus RTU.

Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung

Reihenfolge und Inhalt der folgenden Abschnitte sind identisch mit denen in den jeweiligen Abschnitten der Englischen Fassung.

1 Anwendungsbereich

Dieser Teil von IEC 62769 legt den FDI-Server fest. Die gesamtheitliche FDI-Architektur ist in Bild 1 dargestellt. Die im Anwendungsbereich dieses Dokuments liegenden Architekturkomponenten sind in diesem Bild hervorgehoben.

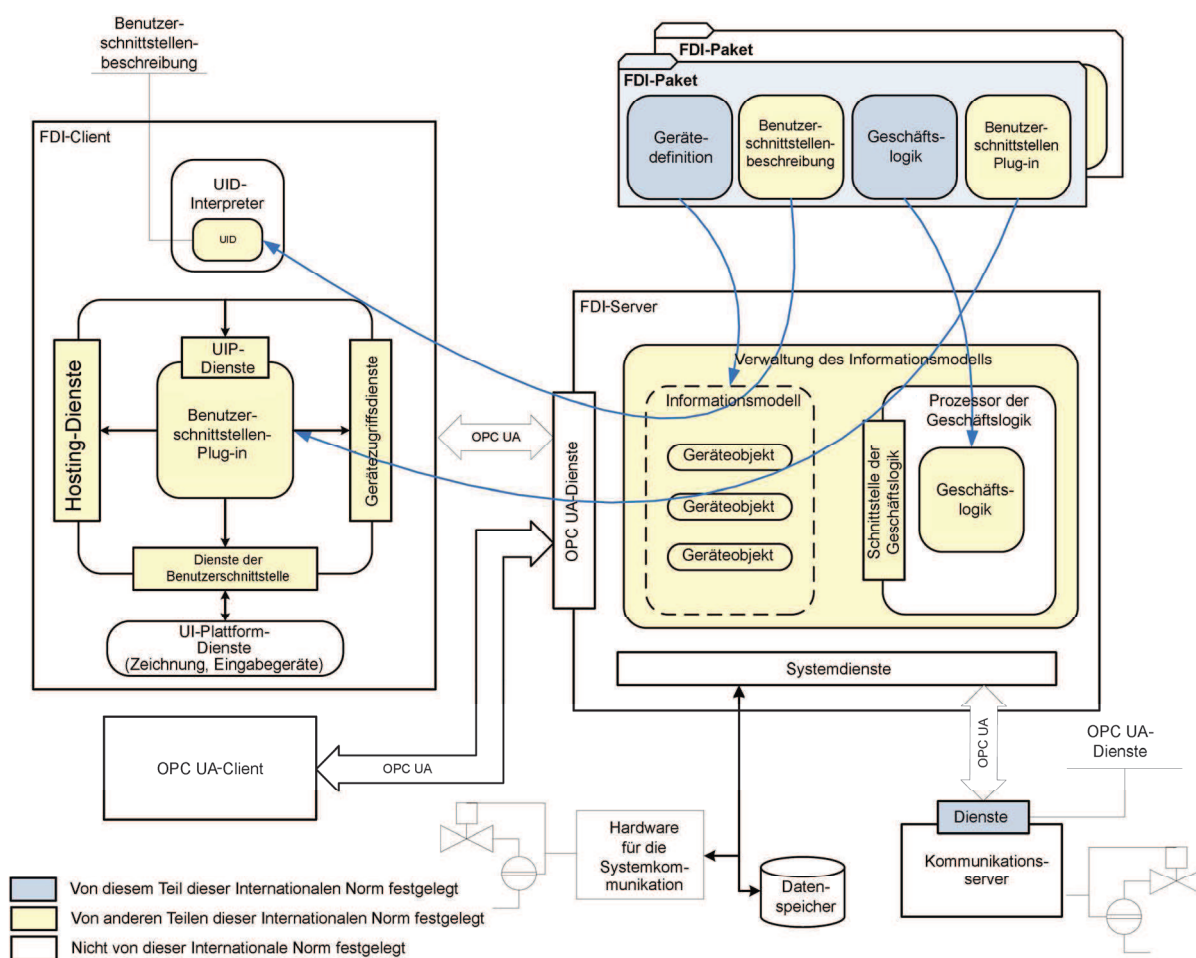


Bild 1 – FDI-Architektur

3 Begriffe, Abkürzungen und Konventionen

3.1 Begriffe

Für die Anwendung dieses Dokuments gelten die Begriffe nach IEC 62769-1 und die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Anwendung in der Normung unter den folgenden Adressen bereit:

- IEC Electropedia: verfügbar unter <http://www.electropedia.org/>
- ISO Online Browsing Platform: verfügbar unter <http://www.iso.org/obp>

3.1.1

Aktionsproxy

(en: actions proxy)

interne Einheit des FDI-Servers, die alle EDD-Methoden zusammenfasst, welche in einer Definition der EDD-Aktion festgelegt sind

3.2 Abkürzungen

Für die Anwendung dieses Dokuments gelten die Abkürzungen nach IEC 62769-1.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIELD DEVICE INTEGRATION (FDI) –

Part 3: FDI-Server

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62769 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in: 2015. This edition constitutes a technical revision.

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

- a) Support for generic protocol extension for faster adoption of other technologies
- b) Support for Package Developers to build EDDs targeted for today's EDD bases system under a single development tool.
- c) Digital signature now include trusted timestamping for long term validation of FDI Package

- d) Running UIs in a sandbox
- e) Time stamp for device package signature
- f) Support of new protocols
- g) Generic protocol extension to allow adoption of other communication protocols
- h) Based on generic protocol extension: Modbus RTU;

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

FDIS	Report on voting
65E/XXX/FDIS	65E/XXX/RVD

Full information on the voting for the approval of this International Standard 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 committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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.

The National Committees are requested to note that for this document the stability date is 2022.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

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.

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INTRODUCTION

84 The IEC 62769 series has the general title "Field Device Integration (FDI)" and the following
85 parts:

- 86 – Part 1: Overview
- 87 – Part 2: FDI Client
- 88 – Part 3: FDI Server
- 89 – Part 4: FDI Packages
- 90 – Part 5: FDI Information Model
- 91 – Part 6: FDI Technology Mapping
- 92 – Part 7: FDI Communication Devices
- 93 – Part 100: Profiles – Generic Protocol Extensions
- 94 – Part 101-1: Profiles – Foundation Fieldbus H1
- 95 – Part 101-2: Profiles – Foundation Fieldbus HSE
- 96 – Part 103-1: Profiles – PROFIBUS
- 97 – Part 103-4: Profiles – PROFINET
- 98 – Part 109-1: Profiles – HART and WirelessHART
- 99 – Part 115-2: Profiles – Protocol-specific Definitions for Modbus RTU
- 100 – Part 150-1: Profiles – ISA 100.11a

101

FIELD DEVICE INTEGRATION (FDI) –

Part 3: FDI-Server

1 Scope

This part of IEC 62769 specifies the FDI Server. The overall FDI architecture is illustrated in Figure 1. The architectural components that are within the scope of this document have been highlighted in this figure.

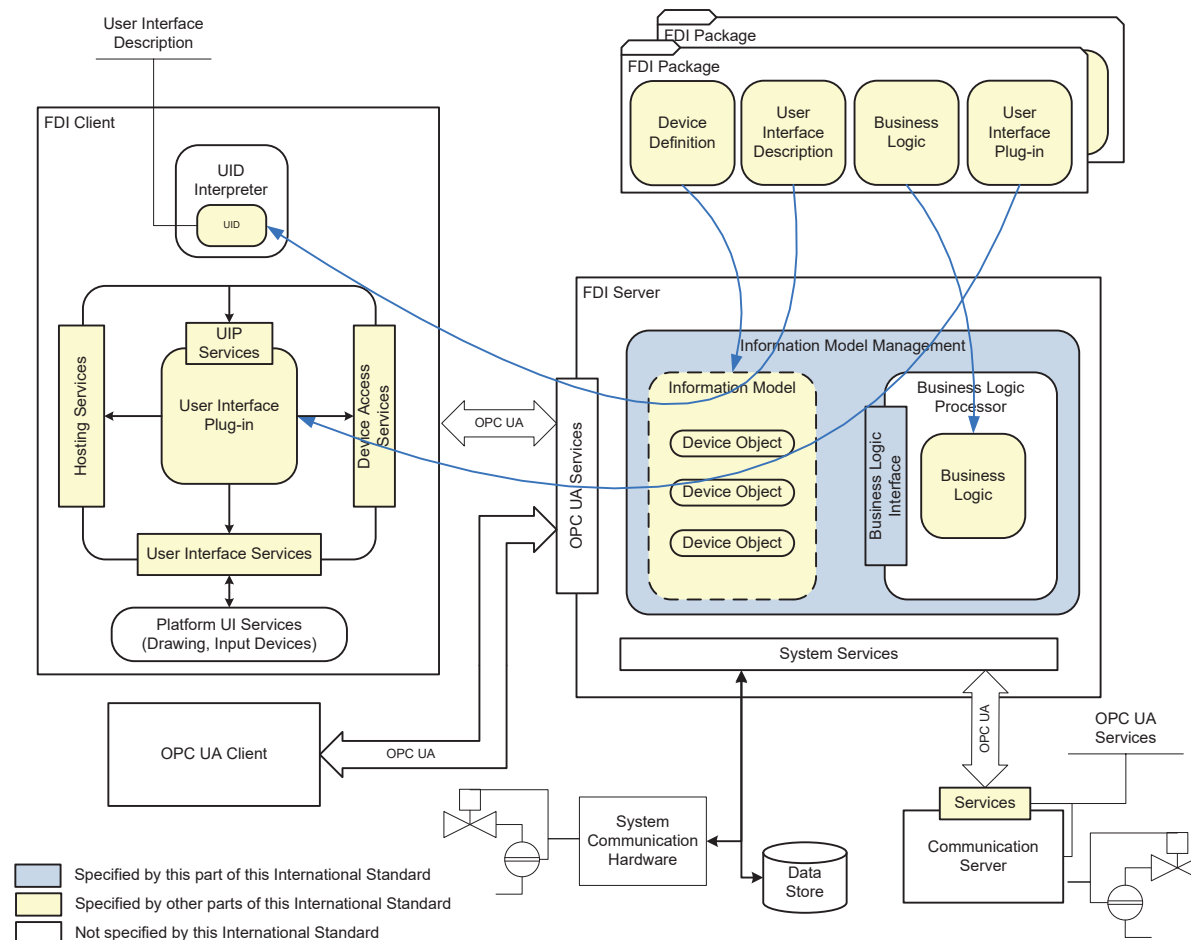


Figure 1 – FDI architecture diagram

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 61804 (all parts), *Function blocks (FB) for process control and Electronic Device Description Language (EDDL)*

IEC 61804-3, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 3: EDDL syntax and semantics*

IEC 61804-4, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 4: EDD interpretation*

IEC 62541 (all parts), *OPC unified architecture*

- 124 IEC 62541-4, *OPC unified architecture – Part 4: Services*
125 IEC 62541-7, *OPC unified architecture – Part 7: Profiles*
126 IEC 62769-1, *Field Device Integration (FDI) – Part 1: Overview*
127 IEC 62769-2, *Field Device Integration (FDI) – Part 2: FDI Client*
128 IEC 62769-4, *Field Device Integration (FDI) – Part 4: FDI Packages*
129 IEC 62769-5, *Field Device Integration (FDI) – Part 5: FDI Information Model*
130 IEC 62769-6, *Field Device Integration (FDI) – Part 6: FDI Technology Mapping*
131 IEC 62769-7, *Field Device Integration (FDI) – Part 7: Communication Devices*
132

133 3 Terms, definitions, abbreviated terms and acronyms

134 3.1 Terms and definitions

135 For the purposes of this document, the terms and definitions given in IEC 62769-1 as well as
136 the following apply.

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

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

141 3.1.1

142 actions proxy

143 internal FDI Server entity that encapsulates all the EDD Methods specified in an EDD Action
144 definition

145 3.2 Abbreviated terms and acronyms

146 For the purposes of this document, the abbreviated terms and acronyms given in IEC 62769-1
147 apply.

148 4 Overview

149 The structure for an FDI Server is shown in Figure 1.

150 FDI Servers that support connectivity with third-party FDI Clients shall support OPC UA. A
151 vendor can provide both an FDI Server and one or more FDI Clients. In this case, the FDI
152 Clients can communicate with the FDI Server through proprietary protocols.

153 An FDI Server communicates with devices via Native Communication (see 7.2.1) and/or
154 Communication Devices (see IEC 62769-7).

155 An FDI Server provides information to FDI Clients through an Information Model (see
156 IEC 62769-5) as follows.

- 157 • The Information Model includes information about Device Types and Device Instances.
158 The information for a Device Instance includes offline data (engineering data), as well as
159 online data (values from the physical device).
- 160 • The Information Model is created using information from FDI Packages. However, not all
161 of the information in an FDI Package is reflected in the Information Model.
- 162 • Referential integrity of the Information Model is maintained using information from FDI
163 Packages.

- FDI Packages can contain Attachments that contain device manuals and protocol specific information (see IEC 62769-4). Those Attachments, including device manuals and protocol specific support files, are exposed via the Information Model.
 - FDI Device Packages contain information about device types (see IEC 62769-4). Each device type defined in a package is mapped to a distinct DeviceType node in the Information Model.
 - FDI Profile Packages are used to provide interaction with devices for which an FDI Device Package does not exist (see IEC 62769-4).
 - Multiple revisions of an FDI Package generate distinct DeviceType nodes in the Information Model (see IEC 62769-4).
- FDI Packages contain digital signatures that allow an FDI Server to authenticate their contents (see IEC 62769-4). An FDI Server shall not use an FDI Package if the digital signature provided by the FDI Package is invalid.
- An FDI Server shall verify the FDI Technology Version (see IEC 62769-1) of any FDI Package it uses to ensure the FDI Package is compatible with the FDI Server.

5 Information Model

5.1 General

The FDI Server shall use the Device Definition of an FDI Package to maintain the Information Model.

The Device Definition can contain conditional expressions. Conditional expressions are used when a certain aspect of the Device Definition is not static but rather is dependent on the state of the device. Whenever the online or offline values of a Device Instance are modified, the FDI Server shall re-evaluate the relevant conditional expressions and modify the Information Model accordingly.

The evaluation of conditional expressions can invalidate variables in the Information Model. The FDI Server shall change the AccessLevel attribute of invalidated variables such that they are neither readable nor writable and the status of these variables shall be set to bad. Read and write service requests for invalidated variables shall return a failure.

The Device Definition can specify relationships between variables in a device. These relationships can impact the value of variables in the Information Model.

The FDI Server shall generate DataChange Notifications to any FDI Clients that are subscribing to Information Model elements that have changed.

FDI Packages provide Business Logic that is used by the FDI Server to maintain the integrity of the Information Model. The Business Logic specified in an FDI Package can invoke built-in functions that shall be implemented by the FDI Server. The built-in functions that shall be implemented by the FDI Server are specified in IEC 61804-5.

5.2 Online/Offline

5.2.1 Overview

The Information Model maintained by the FDI Server contains online and offline values. The online values reflect values in a physical component/device. The offline values reflect values stored in a configuration database.

The offline values are updated through write service requests from an FDI Client or Business Logic executed by the FDI Server. The offline values are not updated when the FDI Server reads data from the device or writes data to the device.

The online values in the Information Model are not updated through write service requests. Successful write service requests through the Information Model result in value changes in the physical devices. The online values in the Information Model will then be updated as a result of read service requests or subscriptions.

212 FDI Servers can provide a server-specific mechanism for creating Device Instances without
213 the presence of physical hardware. The FDI Server creates these instances using information
214 in FDI Packages. All read/write requests for online values for Device Instances with no
215 physical device shall return an error.

216 The transfer of information between the offline values and the physical device is supported
217 through the TransferToDevice and TransferFromDevice methods in the Information Model.
218 These Methods shall implement the download and upload procedures, respectively, as
219 specified in IEC 61804-4. When no implementation is provided based on IEC 61804-4, then
220 these Methods shall return Bad_NotSupported, as per IEC 62541-4.

221 The Device shall have been locked prior to invoking these methods, as specified in
222 IEC 62769-5.

223 5.2.2 Transfer to device

224 The TransferToDevice method shall implement the download procedure as specified in
225 IEC 61804-4. This transfers the offline values to the physical device.

226 As a general rule, the FDI Server should not change the Online variable node when writing a
227 value to the device. The Online variable node should be updated only in the process of read
228 operations or subscriptions. Notwithstanding, as specified in IEC 62769-5, the FDI Server will
229 reset any cached Value for the target Nodes in the Information Model so that they will be re-
230 read next time they are requested.

231 The status information returned for each variable included in the write service request is used
232 to compose the TransferResult, as specified in IEC 62769-5.

233 5.2.3 Transfer from device

234 The TransferFromDevice method shall implement the upload procedure as specified in
235 IEC 61804-4. This transfers the values from the physical device to the offline values.

236 If any read operations from the device fail during upload, the corresponding offline value shall
237 not be modified.

238 The status information returned for each variable included in the read service request is used
239 to compose the TransferResult, as specified in IEC 62769-5.

240 5.3 Access privileges

241 Systems implement security and access policies based on a number of characteristics such
242 as user role and plant area. FDI Servers use these policies, along with information in FDI
243 Packages, to determine the access privileges granted to the user.

244 The elements of an FDI Package can be associated with one or more usage attributes. The
245 FDI Server uses these attributes to set the UserAccessLevel attribute of Variables and the
246 UserExecutable attribute of Methods. The usage attributes in an FDI Package are simply hints
247 to be used by the FDI Server, i.e., they may be disregarded or overridden by the FDI Server.
248 See also Annex B.

249 5.4 Private Parameters

250 The Parameters and Actions specified in an FDI Package may be declared private. Private
251 Parameters and Actions shall not be browsable; they shall only be accessible through
252 references from other elements of an FDI Package.

253 More specifically, the FDI Server shall support private Parameters and Actions as follows.

- 254 • The FDI Server shall create nodes in the Information Model for the private Parameters and
255 Actions.
- 256 • The FDI Server shall not include information about private Parameters and Actions in a
257 response to a Browse, BrowseNext, QueryFirst, or QueryNext service request.
- 258 • The FDI Server shall return the NodeIds of private Parameters and Actions when the
259 name of a private Parameter or Action is passed to TranslateBrowsePathToNodeIds.

- The FDI Server shall process a read/write service request for a private Parameter in the same way as it does for public (browsable) Parameters (see 5.7 and 5.8).
- The FDI Server shall execute private Actions in the same way as it does public (browsable) Actions (see 5.12).

An example of private parameters is parameters that should only be modified through an Action. These parameters should not be visible to FDI Clients to prevent direct access. FDI Clients invoke Actions to access these private parameters.

5.5 Locking

The FDI Server provides locking services to grant FDI Clients exclusive access to Device and Network elements in the Information Model. The locking services consist of a set of Methods and status information. The methods, and their behavior, are specified in IEC 62769-5.

The following behavior shall be implemented by the FDI Server to support locks.

- Locking applies to both online and offline nodes.
- Once locked by one FDI Client, any attempt to write to a Parameter or to execute an Action by another FDI Client shall be rejected.
- Locking is not required for read services.
- Parameters that are locked by one FDI Client can still be read by other FDI Clients, i.e., read requests on a Parameter that is locked are not rejected.

Internal use of the locking mechanism for maintaining the Information Model integrity is FDI Server vendor specific.

Figure 2 illustrates a locking sequence with multiple service invocations during the locked state.

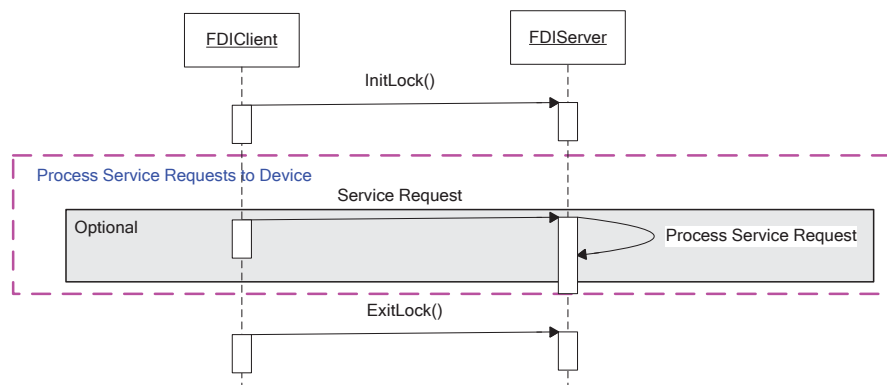


Figure 2 – Locking services

A service request that requires locking shall fail either partially or completely if no lock has been acquired by the FDI Client via InitLock prior to requesting the service. The FDI Client has to release the lock via ExitLock after all service requests have been completed.

A write operation will partially fail, i.e., it will return a status code for each variable in the set of variables to be written since some may belong to devices that are locked and some to devices that are not locked.

FDI Servers may queue InitLock requests until a service for which a lock has been created completes and the lock has been released. However, such an optimization is not part of the standard behavior required of an FDI Server.

5.6 EditContext

5.6.1 Concept and usage model

The FDI Server provides the EditContext model to interact with Clients during their editing task. The concept is closely related to UIDs and fulfills the needs for Server-driven UI dialogs based on EDDL rules.

An EditContext can be used to make changes to Variable Values visible to the Server without applying them to the online or offline representation of a Device. The Server will apply business logic associated to the edited Variable which – in some cases – causes changes to other Variable Values (e.g. if an engineering unit is changed) or the UID (e.g. a Variable becomes invisible). Thus the Client can use an EditContext to modify (edit) Parameters like engineering units, ranges and more, verify any side effects, and re-adjust the settings before applying the changes.

An FDI Server may implement different EditContext strategies:

- A single EditContext instance for all dialogues of an FDI Client.
- Multiple EditContext instances.
- Hierarchical EditContext instances.

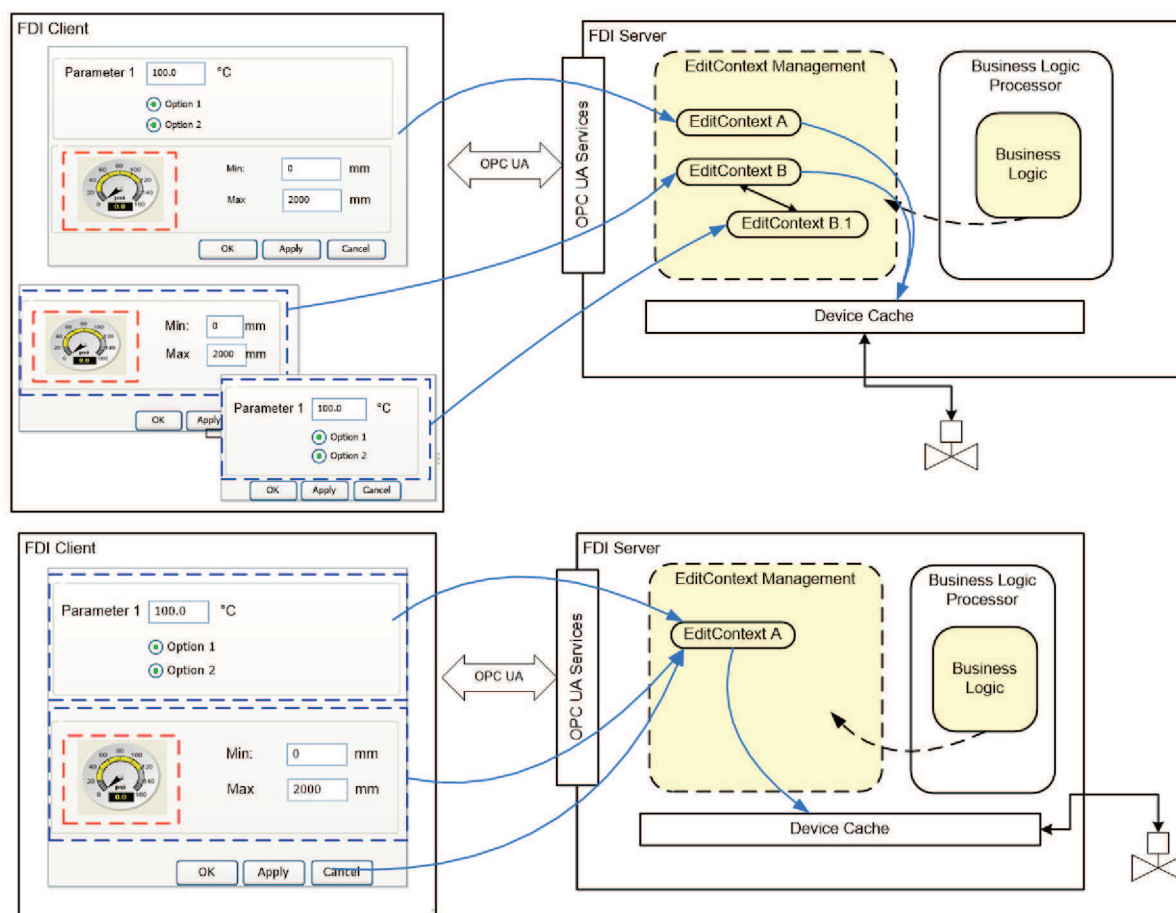


Figure 3 – EditContext models

Figure 3 shows two possible Server strategies and how the Client can adapt. In the lower scenario the Server provides a single EditContext instance for all dialogs. Here, the Client groups all dialogs and exposes a single set of buttons to Apply and Cancel, because it always concerns all edits.

In the upper scenario, the Server provides multiple EditContext instances, one of them as child of another one. Each instance can be addressed separately. If the changes

instance are applied, they are transferred to the parent. If the changes in a root instance are applied, they are transferred to the Device.

The parent-child dependencies are defined in IEC 61804-4 in section Session Management.

5.6.2 Services

A set of Services is provided to the FDI Client to maintain EditContext instances (see IEC 62769-5 for a detailed description of these Services):

- **GetContext** – This Service is used to request an EditContext instance. The Client specifies certain characteristics for the Server to decide which EditContext instance to return. Depending on its internal strategy, the Server returns the same instance or new instances.
- **RegisterNodes** – The FDI Client has to register all Nodes of the Information Model that shall be maintained in an EditContext. It is possible to register Nodes of the online and of the offline representation of a Device. The result is new NodeIds that the Client shall use when calling Services to read, write, subscribe to Variables or to invoke Actions.
- **Apply** – Transfer the modified (edited) Variable Values to the parent (either a parent EditContext instance or the Device). If the same Variable has been edited in the parent instance it will be overwritten with a call of the Apply Service for the child.
- **Reset** – Clears all modifications. A Reset of already applied modifications is not possible.
- **Discard** – Deletes an EditContext instance (and its children). Edited Values that have not been applied are discarded. Once deleted, all registered NodeIds will be invalid. If such NodeIds are still subscribed, the Client is notified with proper StatusCodes.

The Client first calls GetEditContext to acquire an EditContext instance. It will then register the Nodes it wants to be part of it. The registration returns new NodeIds which can then be used for reading, writing or subscribing Variables and for calling Methods.

The Client can call GetEditContext multiple times, for instance when it opens an additional edit window or for a completely separate dialog (diagnosis in parallel to configuration). It is up to the Server strategy whether it returns a new instance or the same instance. The Client is expected to adapt its user interface to the EditContext strategy of the Server. See Figure 3 for how Clients may position the Apply and Cancel buttons so that the User clearly understands which changes s/he applies or discards.

5.6.3 NodeIds

RegisterNode returns two NodeIds for each registered Node: a ContextNodeId and a DeviceNodeId. The Client uses these NodeIds when calling OPC UA Services to read, write and subscribe or call a Method.

Using the ContextNodeId addresses the Value in the EditContext instance. Using the DeviceNodeId addresses the Value in the Device.

5.6.4 Reading

Reading or subscribing a Variable with the ContextNodeId will return the edited Value from the EditContext instance. If no edited Value exists, the Value from the parent instance or the Device (online or offline) will be returned.

The StatusCode indicates whether the Value originates from the Device (StatusCode Good defined in IEC 62541) or from an EditContext instance (StatusCode Good_Edited defined in IEC 62769-5).

Reading or subscribing a Variable with the DeviceNodeId will return the Value from the Device (online or offline).

5.6.5 Writing

Writing to a Variable with the ContextNodeId modifies the Value in the EditContext instance.