

**OCF “Fargo” – Identifier Clarification ("di", "pid", and "piid" Properties) – Core
Technology WG CR 2400**

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****First Change****

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in the following apply.

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

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

<...existing text in clause to this point...>

3.1.29

Partial UPDATE

an UPDATE operation to a Resource (3.1.32) that includes a subset of the Properties (3.1.35) that are visible via the OCF Interface (3.1.19) being applied for the Resource Type (3.1.36)

3.1.30

Permanent Immutable ID

an identity for a Device (3.1.14) that cannot be altered

3.1.31

Physical Device

the physical thing on which a Device(s) (3.1.14) is exposed

<...existing text to end of clause...>

****Second Change****

6 Identification and addressing

6.1 Introduction

Facilitating proper and efficient interactions between elements in the Framework, requires a means to identify, name and address these elements.

The *identifier* unambiguously identifies an element in a context or domain. The context or domain may be determined by the use or the application. The identifier is expected to be immutable over the lifecycle of that element and is unambiguous within a context or domain.

The *address* is used to define a place, way or means of reaching or accessing the element in order to interact with it. An address may be mutable based on the context.

The *name* is a handle that distinguishes the element from other elements in the Framework. The name may be changed over the lifecycle of that element.

There may be methods or resolution schemes that allow determining any of these based on the knowledge of one or more of others (e.g., determine name from address or address from name).

Each of these aspects may be defined separately for multiple contexts (e.g., a context could be a layer in a stack). So an address may be a URL for addressing Resource and an IP address for addressing at the connectivity layer. In some situations, both these addresses would be required. For example, to do RETRIEVE (see 8.3) operation on a particular Resource representation, the Client needs to know the address of the target Resource and the address of the Server through which the Resource is exposed.

In a context or domain of use, a name or address could be used as identifier or vice versa. For example, a URL could be used as an identifier for a Resource and designated as a URI.

The remainder of this clause discusses the identifier, address and naming from the point of view of the Resource model and the interactions to be supported by the Resource model. Examples of interactions are the RESTful interactions, i.e. CRUDN operation (clause 8) on a Resource. Also the mapping of these to transport protocols, e.g., CoAP is described.

6.2 Identification

6.2.1 Device and Platform identification

This document defines three identifiers that are used for identification of the Device. All identifiers are exposed via Resources that are also defined within this document (see clause XXX).

The Permanent Immutable ID ("piid" Property of "/oic/d") is the immutable identity of the Device, the persistent valid value of this property is typically only visible after the Device is on-boarded (when not on-boarded the Device typically exposes a temporary value). This value does not change across the life-cycle of the Device.

The Device ID ("di" Property of "/oic/d") is a mutable identity. The value changes each time the Device is on-boarded. It reflects a specific on-boarded instance of the Device.

The Platform ID ("pi" Property of "/oic/p") is the immutable identity of the Platform on which the Device is resident. When multiple logical Devices are exposed on a single Platform (for example, on a Bridge) then the "pi" exposed by each Device should be the same.

6.2.2 Resource identification and addressing

A Resource may be identified using a URI and addressed by the same URI if the URI is a URL. In some cases a Resource may need an identifier that is different from a URI; in this case, the Resource may have a Property whose value is the identifier. When the URI is in the form of a URL, then the URI may be used to address the Resource.

An OCF URI is based on the general form of a URI as defined in IETF RFC3986 as follows:

```
<scheme>://<authority>/<path>?<query>
```

Specifically the OCF URI is specified in the following form:

```
ocf://<authority>/<path>?<query>
```

The following is a description of values that each component takes.

The *scheme* for the URI is "ocf". The "ocf" scheme represents the semantics, definitions and use as defined in this document. If a URI has the portion preceding the "/" (double slash) omitted, then the "ocf" scheme shall be assumed.

Each transport binding is responsible for specifying how an OCF URI is converted to a transport protocol URI before sending over the network by the requestor. Similarly on the receiver side,

each transport binding is responsible for specifying how an OCF URI is converted from a transport protocol URI before handing over to the Resource model layer on the receiver.

The authority of an OCF URI shall be the Device ID ("di") value, as defined in [OCF Security], of the Server.

The *path* is a string that unambiguously identifies or references a Resource within the context of the Server. In this version of the document, a path shall not include pct-encoded non-ASCII characters or NUL characters. A *path* shall be preceded by a "/" (slash). The *path* may have "/" (slash) separated segments for human readability reasons. In the OCF context, the "/" (slash) separated segments are treated as a single string that directly references the Resources (i.e. a flat structure) and not parsed as a hierarchy. On the Server, the path or some substring in the path may be shortened by using hashing or some other scheme provided the resulting reference is unique within the context of the host.

Once a path is generated, a Client accessing the Resource or recipient of the URI should use that path as an opaque string and should not parse to infer a structure, organization or semantic.

A query string shall contain a list of "<name>=<value>" segments (aka name-value pair) each separated by a "&" (ampersand). The query string will be mapped to the appropriate syntax of the protocol used for messaging. (e.g., CoAP).

A URI may be either fully qualified or relative generation of URI.

A URI may be defined by the Client which is the creator of that Resource. Such a URI may be relative or absolute (fully qualified). A relative URI shall be relative to the Device on which it is hosted. Alternatively, a URI may be generated by the Server of that Resource automatically based on a pre-defined convention or organization of the Resources, based on an OCF Interface, based on some rules or with respect to different roots or bases.

The absolute path reference of a URI is to be treated as an opaque string and a Client should not infer any explicit or implied structure in the URI – the URI is simply an address. It is also recommended that Devices hosting a Resource treat the URI of each Resource as an opaque string that addresses only that Resource. (e.g., URI's "/a" and "/a/b" are considered as distinct addresses and Resource b cannot be construed as a child of Resource a).

6.3 Namespace:

The relative URI prefix "/oic/" is reserved as a namespace for URIs defined in OCF specifications and shall not be used for URIs that are not defined in OCF specifications.

6.4 Network addressing

The following are the addresses used in this document:

IP address

- An IP address is used when the Device is using an IP configured interface.
- When a Device only has the identity information of its peer, a resolution mechanism is needed to map the identifier to the corresponding address.

****Third Change****

Table 27 – "oic.wk.d" Resource Type definition

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
(Device) Name	"n"	"string"	N/A	N/A	R	Yes	Human friendly name defined by the vendor. In the presence of "n" Property of "/oic/con", both have the same Property Value. When "n" Property Value of "/oic/con" is modified, it shall be reflected to "n" Property Value of "/oic/d".
Spec Version	"icv"	"string"	N/A	N/A	R	Yes	Spec version of this document this Device is implemented to, The syntax is "ocf.<major>.<minor>.<sub-version>" where <major>, <minor>, and <sub-version> are the major, minor and sub-version numbers of the document respectively. For this version of the document, the string value shall be "ocf.2.0.4".
Device ID	"di"	"uuid"	N/A	N/A	R	Yes	Unique identifier for Device. This value shall be the same value (i.e. mirror) as the doxm.deviceuuid Property as defined in ISO/IEC 30118-2:2018. Handling privacy-sensitivity for the "di" Property, refer to clause 13.16 in ISO/IEC 30118-2:2018.
Data Model Version	"dmv"	"csv"	N/A	N/A	R	Yes	Spec version of the Resource specification to which this Device data model is implemented; if implemented against a Vertical specific Device specification(s), then the Spec version of the vertical specification this Device model is implemented to. The syntax is a comma separated list of <res>.<major>.<minor>.<sub-version> or <vertical>.<major>.<minor>.<sub-version>. <res> is the string "ocf.res" and <vertical> is the name of the vertical defined in the Vertical specific Resource specification. The <major>, <minor>, and <sub-version> are the major, minor and sub-version numbers of the specification respectively. One entry in the csv string shall be the applicable version of the Resource Type Specification for the Device (e.g "ocf.res.1.0.0"). If applicable, additional entry(-ies) in the csv shall be the vertical(s) being realized (e.g. "ocf.sh.1.0.0"). This value may be extended by the vendor. The syntax for extending this value, as a comma separated entry, by the vendor shall be by adding x.<Domain_Name>.<vendor_strin

							g>. For example "ocf.res.1.0.0, ocf.sh.1.0.0, x.com.example.string", The order of the values in the comma separated string can be in any order (i.e. no prescribed order). This Property shall not exceed 256 octets.
Permanent Immutable ID	"piid"	"uuid"	N/A	N/A	R	Yes	A unique and immutable Device identifier. A Client can detect that a single Device supports multiple communication protocols if it discovers that the Device uses a single Permanent Immutable ID value for all the protocols it supports. Handling privacy-sensitivity for the "piid" Property, refer to clause 13.16 in ISO/IEC 30118-2:2018.
Localized Descriptions	"ld"	"array"	N/A	N/A	R	No	Detailed description of the Device, in one or more languages. This Property is an array of objects where each object has a "language" field (containing an IETF RFC 5646 language tag) and a "value" field containing the Device description in the indicated language.
Software Version	"sv"	"string"	N/A	N/A	R	No	Version of the Device software.
Manufacturer Name	"dmn"	"array"	N/A	N/A	R	No	Name of manufacturer of the Device, in one or more languages. This Property is an array of objects where each object has a "language" field (containing an IETF RFC 5646 language tag) and a "value" field containing the manufacturer name in the indicated language.
Model Number	"dmno"	"string"	N/A	N/A	R	No	Model number as designated by manufacturer.
Ecosystem Name	"econame"	"string"	enum	N/A	R	No	This is the name of ecosystem that a Bridged Device belongs to. If a Device has "oic.d.virtual" as one of Resource Type values ("rt") the Device shall contain this Property, otherwise this Property shall not be included. This Property has enumeration values: ["BLE", "oneM2M", "UPlus", "Zigbee", "Z-Wave"].
Version of Ecosystem	"ecoversion"	"string"	N/A	N/A	R	No	This is the version of ecosystem that a Bridged Device belongs to. If a Device has "oic.d.virtual" as one of its Resource Type values ("rt") the Device should contain this Property, otherwise this Property shall not be included.