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Information technology — IT asset management —

Part 6: Hardware identification tag

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Partie 6: Étiquette d'identification du matériel

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

A list of all parts in the ISO/IEC 19770 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

0.1 Overview

The ISO/IEC 19770 series for information technology (IT) asset management (ITAM) addresses both the processes and technology for managing software, hardware, and related IT assets. Because IT is an essential enabler for almost all activity in today's world, the ISO/IEC 19770 series integrates tightly into all of the IT functions. Hardware identification (HWID) tags have the capacity to assist in other management functions outside the scope of financial-focused or compliance-focused ITAM processes. From a technology perspective, ITAM standards for information structures provide the data interoperability of software and hardware management data, and the basis for many related benefits such as more effective security in the management of software and the authentication of hardware. ITAM standards for information structures also facilitate significant automation of IT functionality, such as improved authentication of software, and hardware for automated exposure of identification and mitigation.

0.2 Purpose of this document

This document is an International Standard for HWID tags. The hardware identification tag is a standardized data structure containing hardware identification information about a hardware product and/or the system configuration of multiple hardware products that supports new and automated management functions. Product information provided in the hardware identification tag structure is often provided in an XML data file, but the same HWID tag product information may be accessible through other means depending on the computing device being managed.

HWID tags are created by a HWID tag producer, for example, a hardware manufacturer who develops and distributes hardware. HWID tag data is utilized by HWID tag consumers, for example, an inventory tool or service that collects information from a physical or virtual device for a variety of purposes.

This document has been developed to facilitate automation of IT processes through the use of hardware identification tags and for applications which use those tags, for the purposes of inventory control, configuration management, hardware security, or logistics. This document includes information which facilitates human understanding (such as model and colloquial version name), but it is unrealistic to expect to create, manage, and use hardware identification tags without the use of automated capabilities built into specialist or generalized tools. The extent to which such capabilities are provided by specialist commercial products, open-source-type products, or platforms themselves, depends on market developments over time.

This document supports IT asset management processes as defined in ISO/IEC 19770-1. This document is also designed to work together with other parts in the ISO/IEC 19770 series, including ISO/IEC 19770-2, ISO/IEC 19770-3, ISO/IEC 19770-4, and ISO/IEC 19770-5, which are International Standards for software identification, entitlement, resource utilization measurement, and overview/vocabulary.

This document provides a common set of terms and associated transport format to facilitate the management of IT hardware. The intended benefits include easier demonstration of proof of ownership, improved asset management, and improved security.

Furthermore, an additional benefit of having a standard for describing hardware components is to encourage the normalization by industries of names for, and the details of, different types of hardware. A common lexicon is critical to standardization and shared understanding of terminology. The terms in this document should form a part of that lexicon over time.

Hardware identification tags can benefit all stakeholders involved in the development, manufacturing, distribution, deployment, installation, and on-going management of hardware. Key benefits associated with hardware identification tags include the following.

a) The ability to consistently and authoritatively identify hardware products that need to be managed for any purposes of inventory control, configuration management, hardware security, or logistics or for the specification of dependencies. Hardware identification tags provide the meta-data necessary to support more accurate identification than other traditional hardware identification techniques.

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b) The ability to identify groups of hardware products in the same way as individual hardware products (e.g., components and modules within a single system), thus enabling entire groups of hardware products to be managed as a system with the same flexibility as individual products.

c) The ability to automatically relate installed hardware with other information such as repair installations, configuration issues, maintenance agreements or vulnerabilities.

d) The ability to facilitate interoperability of hardware identification between different hardware manufacturers, different hardware platforms, different IT management tools, and within hardware manufacturing, as well as between HWID tag producers and HWID tag consumers.

e) The ability to facilitate automated approaches to hardware inventory, using information both from the hardware identification tag and from the software identification schema as specified in ISO/IEC 19770-2.

f) The ability to provide a comprehensive information structure that identifies different entities, including hardware manufacturers, packagers, distributors external to the hardware consumer, as well as various entities within the hardware consumer, associated with the system configuration, installation, and management of the product on an on-going basis.

g) The ability to establish trust through the optional use of digital signatures by organizations creating hardware identification tags, the ability to validate that hardware identification is authoritative, and from a trusted source.

h) The opportunity for entities other than original hardware manufacturers (e.g. independent providers or in-house personnel) to create non-authoritative hardware identification tags for legacy hardware, and/or for hardware from other manufacturers who do not provide hardware identification tags themselves.

Annex A contains the XML schema document for HWID tags; Annex B provides a UML diagram of the HWID tag schema; Annex C provides sample HWID tags.

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Information technology — IT asset management —

Part 6: Hardware identification tag

1 Scope

This document provides specifications for a transport format which enables the digital encapsulation of this data. This document refers to an encapsulation of hardware identification (HWID) data as a HWID tag, just as ISO/IEC 19770-2 refers to software identification (SWID) tags for software identification.

This document applies to the following.

— Tag producers: organizations that create HWID tags for use by others in the market. A tag producer can be part of the organization creating the hardware or a third-party organization. These organizations can be broken down into two major categories.

  — Device or component providers: entities responsible for the manufacturing or creation of the hardware device and/or associated operating system, virtual environment, or application platform. Platform providers which support this document can additionally provide tag management capabilities at the level of the platform or operating system.

  — Tag tool providers: entities that provide tools to create hardware identification tags. For example, tools within development environments that generate hardware identification tags, or installation tools that can create tags on behalf of the installation process, and/or desktop management tools that can create tags for underlying hardware, virtual machines, or platforms that did not originally have a hardware identification tag.

— Tag consumers: tools and/or organizations who utilize information from HWID tags are broken down into the following two major categories.

  — Device or component consumers: entities that purchase, install, integrate, and/or otherwise deploy physical or virtual hardware or components.

  — IT discovery and processing tool providers: entities that provide tools to collect, store, and process hardware identification tags. These tools may be targeted at a variety of different market segments, including security, asset management, and logistics.

This document deals only with hardware device or component identification.

This document does not detail information technology asset management (ITAM) processes required for discovery and management of hardware (which is provided in ISO/IEC 19770-1) software identification tags (as defined by ISO/IEC 19770-2), entitlement tags (as defined by ISO/IEC 19770-3), or resource utilization measurements (as defined by ISO/IEC 19770-4).

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.

ISO/IEC 19770-2, *Information technology — IT asset management — Part 2: Software identification tag*

ISO/IEC 19770-3, *Information technology — IT asset management — Part 3: Entitlement schema*

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ISO/IEC 19770-5, *Information technology — IT asset management — Part 5: Overview and vocabulary*

RFC 3986[1)], *Uniform Resource Identifier (URI): Generic Syntax*

RFC 7515[2)], *JSON Web Signature*

XML Signature Syntax and Processing Version 1.1, W3C Recommendation 11 April 2013 https://www.w3.org/TR/xmldsig-core1/

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19770-5 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
dynamic attribute
element of a HWID tag that may change over the life of the product or are defined after creation

3.1.2
HAM
hardware asset management
coordinated activity of an organization to realize value from hardware assets

Note 1 to entry: Hardware asset management is a specialization and sub discipline of IT asset.

3.1.3
HWID creator
entity that initially creates a HWID record

Note 1 to entry: This entity can be part of the organization that manufactured the component to which the record relates, in which case the HWID creator and component manufacturer are the same. The HWID creator can also be a separate organization or third party unrelated to the manufacturer (such as in the case where HWID records are created for existing hardware components by an operating system or a tool deployed by the device owner).

3.1.4
HWID schema
hardware Identification schema
information structure containing a digital description of a hardware component and its associated information

3.1.5
legacy hardware
hardware originally created without native information structures

1) https://www.ietf.org/rfc/rfc3986.txt.

2) https://tools.ietf.org/html/rfc7515.

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