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NATIONAL STANDARD OF THE
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ICS 35.040

L 71

GB/T 38663-2020

**Identification System for Internet of Things -
Middleware Standard for Ecode Identification System**

物联网标识体系

Ecode 标识体系中间件规范

Issued on: March 31, 2020

Implemented on: October 1, 2020

Issued by: State Administration for Market Regulation;

**Standardization Administration of the People's Republic of
China.**

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Identification System for Internet of Things - Middleware Standard for Ecode Identification System

1 Scope

This Standard specifies the system architecture, functional requirements and performance index requirements for middleware of Ecode identification system.

This Standard is applicable to the development and application of middleware of the Ecode identification system.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 12905 *Bar Code Terminology*

GB/T 31866 *Identification System for Internet of Things - Entity Code*

GB/T 35419-2017 *Identification System for Internet of Things - Ecode Encoding Specifications for Barcode*

GB/T 35420-2017 *Identification System for Internet of Things - Ecode Encoding Specifications for Two-dimensional Barcode*

GB/T 35421-2017 *Identification System for Internet of Things - Ecode Encoding Specifications for RFID Tag*

GB/T 35423-2017 *Identification System for Internet of Things - Ecode Encoding Specifications for NFC Tag*

3 Terms and Definitions

What is defined in GB/T 12905 and GB/T 31866, and the following terms and definitions are applicable to this document.

3.1 Middleware

- c) Log file management: manage log files, including log name, size of single log file, and number of log files, etc.;
- d) Log output mode management: manage the log output mode, including output to the console, files, and database, etc.

6.1.2 Authority control

The main functions of authority control include:

- a) Authority model: subject, resources, authority, role, and role-authority relationship, and subject-role relationship;
- b) Resource management: perform unified management and control of the services provided by the Ecode identification middleware in the form of resources, including resource name and access address;
- c) Authentication and authorization: authenticate the identity of the user; after passing the identity authentication, the user has the right to access resources.

6.1.3 Security management

The main functions of security management include:

- a) Security audit: audit important user behaviors and abnormal use of system resources. The audit content includes date and time, type, subject identification, object sensitive marking and event results, etc.;
- b) Communication integrity: the communication between the middleware of the Ecode identification platform and application programs supports the transaction transmission mechanism. When the data transmission is abnormally interrupted, the transaction is rolled back and re-transmitted, so as to ensure the integrity of the data;
- c) Access control: restrict the concurrent access of users and set the number of accesses within the unit time.

6.1.4 Abnormality alarm

The main functions of abnormality alarm include:

- a) Equipment operating status alarm: monitor the working status of the hardware equipment linked to the equipment management module; provide alarm prompts for hardware equipment with abnormal working status;
- b) Abnormal data alarm: provide alarm prompts for abnormal data and duplicate data collected and transmitted by the middleware of Ecode identification;

The message conveying module mainly conveys messages between the application interface module and the data processing module. Its main functions include:

- a) Message routing function, which can implement two-way message routing and accurately locate the data processing module and application program that need to be addressed;
- b) Message jitter function. There are circumstances where the message conveying module handles repeated message submission and delivery;
- c) Message conveying assurance function. The upper and lower layers of the message conveying module agree on the message reception standards and ensure that two-way messages can be accurately received;
- d) Message retry function: re-send unsuccessfully delivered messages.

6.2.4 Application interface

The application interface module provides access interfaces for application programs that access the middleware. Its main functions include:

- a) View access interface, which provides data access interfaces to application programs in the form of data views;
- b) Service access interface, which provides data access interfaces to application programs in the form of publishing data as services;
- c) Monitoring and management interface, which provides interfaces to application programs to monitor and manage the middleware runtime services.

6.3 Application Development Subsystem

6.3.1 Development interface

Provide application development interfaces in C, C ++, C # and java language.

6.3.2 Development tools

Support middleware integrated development in development environments, such as: eclipse, idea and visual studio, etc.

6.3.3 Development environment

Support development in development environments, such as: windows, Linux, centos and ubuntu, etc.

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