

The ECHONET Lite Specification

Version 1.00



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The original language of the ECHONET Lite Specifications is Japanese. This English version is a translation of the Japanese version; in case of any queries about the English version, refer to the Japanese version.

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Definitions of Terms

ECHONET

ECHONET is an abbreviation for Energy Conservation & Homecare Network. The term also means an answer to a call or a response, from the word “echo”.

ECHONET Object (EOJ)

A model of information to be disclosed to the network from information owned by the ECHONET Lite Communication Processing Block, or an access procedure model. The information or control target owned by each device is specified as a property, and the operating method (setting, browsing) for this is specified as a service. An ECHONET object is used when class or instance is not considered.

Objects can be classified broadly into two types of objects: equipment object and profile object.

ECHONET Lite

A kind of ECHONET protocol standardized by the ECHONET Consortium. This is a light version of the conventional ECHONET reduced in protocol stack configuration and protocol.

ECHONET Lite Device

An ECHOET Lite node that has communication interfaces and system support functions compliant with the ECHONET Lite Standards for home devices, home electric products, or building/store devices, such as lighting, air conditioning, refrigeration, power equipment, ordinary home appliances, sensors, actuators, etc. This node is also equipped with a centralized system for monitoring, controlling, and operating facilities and equipment, and also such controller functions as operating units (remote controller, etc.).

ECHONET Lite Gateway

An ECHONET Lite node that has a function to connect an ECHONET Lite domains and an external system (including other ECHONET Lite domains). Multiple ECHONET Lite gateways may exist in the domain depending on differences in the external system(s) to be connected.

ECHONET Lite Service (ESV)

A function of the ECHONET Lite Object. The services for property values are specified. There are three such services: “Request”, “Response” (processing response/”process not possible” response), and “Notice”.

ECHONET Lite Communication Processing Block

One processing block for the ECHONET Lite Communication Middleware. This block performs communication protocol processing to facilitate remote device control/monitoring processing for application software, stores information for the above, and controls various information on the self-device as well as other device statuses.

ECHONET Lite Communication Middleware

This middleware is arranged at a position between application software and Lower-Layer Communication Software and performs communication processing according to the ECHONET Lite communication protocol. The major features of ECHONET Lite are implemented by ECHONET Lite Communication Middleware.

ECHONET Lite Domain

A range on the network within which information transmission is logically guaranteed by ECHONET Lite. Generally, it is thought that property and security control, including homes and stores, use the same range as a domain, but the domain is not limited by any standard.

ECHONET Lite Node

A communication node conforming to the ECHONET Lite Specifications.

ECHONET Property (EPC)

An attribute of an ECHONET Lite Object. Attributes such as set values and statuses are defined as properties. For reading or writing, the ECHONET Lite Service is used.

ECHONET Lite Middleware adapter

An adapter used to connect to the ECHONET a device that has neither a communication interface for the transmission medium specified by the ECHONET Lite Specifications nor an ECHONET Lite lower-layer communication software program, protocol difference absorption processing section and ECHONET communication processing block. The interface for communication between the equipment and ECHONET Lite device adapter shall be as specified in the ECHONET Lite Middleware adapter Communication Interface Specifications.

ECHONET Lite Middleware adapter Communication Interface

The interface for communication between an ECHONET Lite middleware adapter and an ECHONET Lite-ready device

ECHONET Lite Middleware adapter Communication Software

A software program that converts and executes services which are exchanged between the ECHONET Lite communication processing block and ECHONET Lite-ready device

application software. There are two types of communication: object generation and peer-to-peer. Switching between the two types is achieved by the equipment interface data recognition service. This software program must be implemented in both the ECHONET Lite middleware adapter and ECHONET Lite-ready device.

ECHONET Lite-Ready Device (Ready_Device)

A piece of equipment that has an application software program which is higher than the ECHONET Lite communication middleware (ECHONET Lite communication processing block). This device performs communication processing below the ECHONET Lite communication middleware (ECHONET Lite communication processing block). This device connected to an ECHONET Lite middleware adapter can connect to the ECHONET Lite network.

EMS (Energy Management Service / Energy Management System)

This service, designed to enable the efficient use of energy, efficiently operates and controls devices while maintaining a safe, comfortable living environment. It can also refer to a system using it as an application.

JEM-1439

A home networking standard (dealing with equipment systems in particular) published by The Japan Electrical Manufacturers' Association in August 1988.

Access Rule (AR)

A group of ECHONET Services executable for ECHONET properties.

Application Software

Software that remotely controls devices connected to the system in the controller, or software that implements device functions themselves in individual devices such as air conditioners or refrigerators.

Instance

An entity when ECHONET Objects exist. When multiple objects of the same class exist in a single node, multiple instances should exist. In ECHONET, Instance Codes are used for instance identification.

Instance Code

A code that represents an instance. However, code 0x00 is used to signify a simultaneous broadcast to all instances.

Device Object

A logical model of the information held by equipment devices or home electrical appliances such as sensors, air conditioners and refrigerators, or of control items that can be remotely controlled. The interface form for remote control is standardized. The information and control target of each device is specified as a property, and the operating method (setting and browsing) is specified as a service.

Device Object super Class

A specified property configuration common to all Device Object classes (class group code 0x00 to 0x05).

Class

A definition of an ECHONET object. In ECHONET, each class is uniquely identified by a combination of Class Group Code and Class Code.

Class Group

A group of classes. In ECHONET, each group is uniquely identified by a combination of Class Group Code and Class Code.

Class Group Code

A code that represents a Class Group. In ECHONET, each class is uniquely identified by a combination of Class Group Code and Class Code.

Class Code

A code that represents a class. This is specified in units of Class Group. In ECHONET, each class is uniquely identified by a combination of Class Group Code and Class Code.

Gateway

→ECHONET Lite Gateway

Individual Identification Information

Unique information for an application to identify each device. This information does not change depending on the network connection position.

Subnet

A group of nodes that can communicate.

Participation

A status in which ECHONET Lite Nodes are connected to the ECHONET Lite network, enabling communication. In other words, this status permits access to a Node Profile Object.

Self-device

A general term for a group of Self-device Objects.

Self-device Object

An ECHONET Object for disclosing self-node functions to others or receiving control from others.

Self-node

A node in which the self is mounted, as viewed from application software and middleware.

System

An application with a specific objective; consists of two or more devices or controllers that are organically operated in a linked form by information exchange.

System Architecture

A configuration of various controllers or devices and a structure for function/role sharing between them in a system consisting of multiple devices or controllers.

Other-device

A general term for a group of Other-device Objects.

Other-device Object

An ECHONET Object that controls other node functions or obtains their status.

Other-node

A node other than the Self-node. This node is accessed through the network.

Communication Middleware

→ECHONET Lite Communication Middleware

Topology

A physical multi-point network configuration. Connection of different transmission media is included.

Full ECHONET Lite Device (Full_Device)

A device that has a communications interface standardized by ECHONET Lite and can be connected to the ECHONET Lite system by itself.

Property

→ECHONET Property

Property Map

The contents of property support for each instance. This is intended to identify mounted functions.

Profile Object

A model of profile information and controls and setting items as an ECHONET Lite Node, such as ECHONET Lite Node operation status, manufacturer information, and Device Object list.

Middleware adapter

→ECHONET Lite middleware adapter

Definitions of Abbreviations

AR

Access Rule

DEOJ

Destination ECHONET Object

EDATA

ECHONET Lite Data

EDT

ECHONET Property Value Data

EHD

ECHONET Lite Header

EOJ

ECHONET Object

EPC

ECHONET Property

ESV

ECHONET Lite Service

Full_Device

Full ECHONET Lite Device

Ready_Device

ECHONET Lite-Ready Device

SEOJ

Source ECHONET Object

TID

Transaction ID