

Title	ホームネットワーク規格との接続性を考慮したLegacy Deviceホームネットワークの構築に関する研究
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A Legacy Device homenetwork model considering the interconnectivity with other homenetwork specifications

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Recently, with technical advancement in information terminals, information appliances, network technology, constructing homenetwork connected devices at home computerized through the network is becoming possible. Along with this, it proposed middleware to construct homenetwork (e.g. ECHONET (which have goal to control air conditioner and washing machine, etc), and HAVi (which have goal to control audio-video equipment)).

However, it seems more likely that LD (Legacy Device) existing appliances stay at home, it is important that can provide interconnectivity with other homenetwork specifications with LD. HAVi uses model called DCM and FCM managed by doing modeling each function. ECHONET uses model managed by object made up device function, profile, communication definition, function that opens it to the public. When it implements gateways to interconnect with other homenetwork specifications, the newer appliance model can be treated by integrating different appliance models between specifications is needed. However, the function to treat whenever the specification increases becomes huge when various functions of various specification are taken to this appliance model and management can become complex.

In this research, we constructed homenetwork consisting of LD have interconnectivity with other homenetwork specifications by implementing gate-

way using appliance model extracted common function each kind of LD and appliances in other homenetwork specifications.

The system proposes LD Object doing modeling appliances in various homenetwork specification, control appliances through it. The appliances control with LD Object through gateway of other homenetwork specifications. LD Manager retrieves appliances in various homenetwork specifications, and generates LD Object in the system.

For the consumer electronic model proposed by this research, the appliance is classified into single appliance and compound appliances composed of single appliances, and the single appliance class and the compound appliance are defined.

The switch of the power supply is classified into hard power supply switching power state by human and soft power supply switching power state by remote-controller in this research. The proposed system treats soft power supply only. When a hard power supply is turning off, appliances should not exist.

The state of power supply is defined On, Off and Stand-by it represents state cannot control power supply. Although it doesn't basically accept the operation in state of Stand-by, the operation that exceptionally releases state of Stand-by. Power Management Object is defined as a target that treats the state of these three kinds of power supplies. The single appliance class and the compound appliance class have this Power Management Object class. The compound appliance class has two or more single appliance classes, and has the Power Management Object class by each single appliance class. To manage these Power Management Object classes, the compound appliance class also has Power Management Object class. Because the appliance class had defined only the function of the appliance, System Object class which has necessary property for the system is defined to create instance of appliance in the system. When creating instance in the system, the LD Object class inherited the appliance class and the System Object class is used.

There is LD Manager to generate this LD Object in the system. This class has the generation of LD Object, the generation of the address of LD Object, the function of the response to the inquiry of LD Object that the retrieval of the appliance in various homenetwork specification.

When LD Object and LD Manager send messages to other homenetwork specifications, each gateway do the protocol conversion and address translation. The sequence of registration of appliance, and of the control is shown.

To verify interconnectivity with othrer homenetwork specifications in proposed system using these classes, we implemented the system. I considered of appliance class difinition, retrieving common function, management of power supply, and interconnectivity with other homenetwork specifications for proposed appliance model.And, I refer to the consideration of retrieving appliances and of security.