

MDK-Shiba User Guide

July 9, 2015



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MDK-Shiba User Guide

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Version	Date	Revision	Name
1.0.0	2015/07/9	Initial Release	T. Kitahara

VCJ MDK-Shiba User Guide

1. Summary

This document describes the system generation process of MDK-Shiba wireless sensor network system that operates in the internet environment. This document is intended to help a user to set up his/her sensor network system with iNode and ZigBee sensor.

Standard MDK-Shiba Development Kit consists of one unit of iNode and one unit of light sensor. VCJ operates VCJ M2M cloud server in the internet for a user to utilize VCJ M2M cloud services. The user configures the network system and develops application software using VCJ M2M cloud services.

2. VCJ MDK-Shiba shipped items

MDK-Shiba standard shipment includes the following items.

(1) iNode

M2M gateway for the wireless sensor network system.

(2) ZigBee sensor

Light sensor.

(3) MDK-Shiba M2M Development Kit Set-Up Guide

(4) MDK-Shiba Light Sensor Guide

The standard shipment does not include an AC adapter cable or an Ethernet cable/WiFi adapter for LAN connection. VCJ asks a user to prepare them.

3. The target network system configuration

MDK-Shiba M2M network system configured by standard MDK-Shiba is illustrated in Fig.1.

The system generation process is described below. Following the process below, a user can configure the wireless sensor network system and even confirm wireless sensor data upload status before actual user application program development. It is convenient and effective for a user to be able to verify hardware setting validity without user application.

The system generation process is conducted with a user PC connected with LAN accessing VCJ M2M cloud services.

A user application is developed utilizing VCJ M2M cloud services. The user application uses VCJ M2M cloud services at runtime but the user application itself has to be set in the user cloud, separate from VCJ cloud

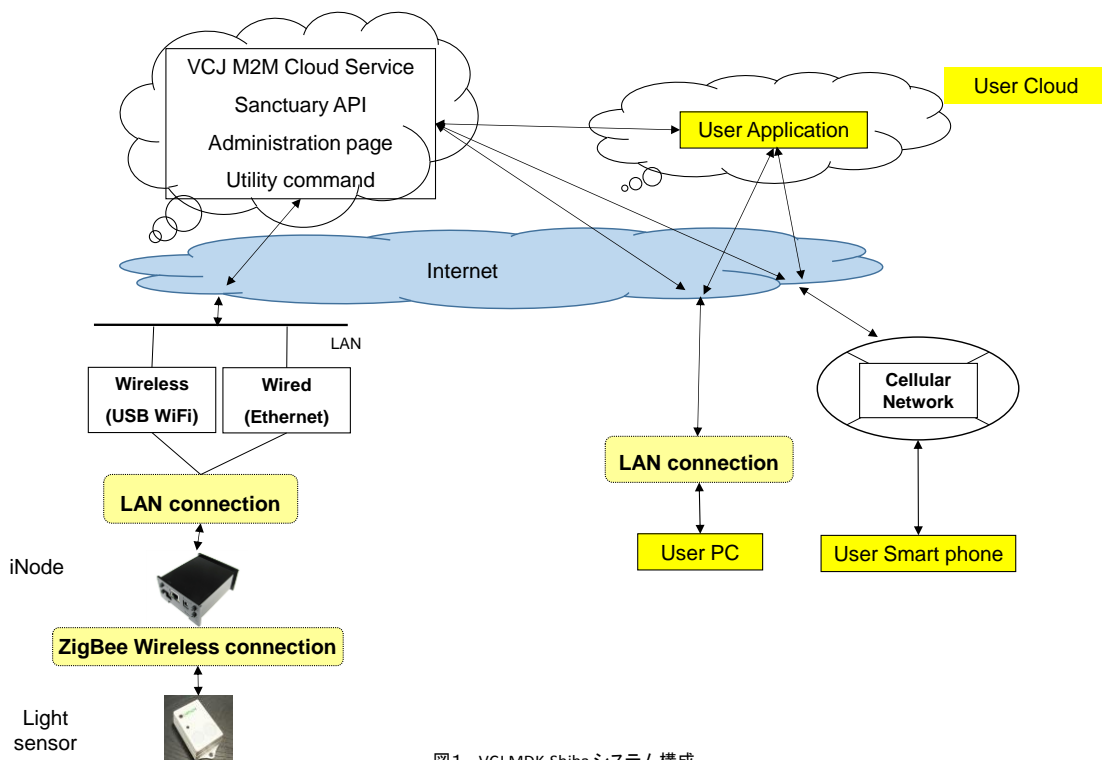


図1. VCJ MDK-Shiba システム構成

4. Operation flow of the system generation

The start-up operation of VCJ MDK-Shiba is as follows.

Please refer to MDK-Shiba M2M System Development Kit Set-Up Guide & MDK-Shiba Light Sensor Guide in detail.

(1) Gateway registration preparation

When you register your iNode to VCJ M2M cloud service as a gateway, you have to access VCJ M2M cloud service administration page by PC. VCJ M2M cloud service administration page requires user name and password to identify valid access. User name and password are notified to you together with the MDK-Shiba shipment. You use them to log in.

(2) iNode LAN setting

When DHCP is used, IP address is given at iNode LAN connection. When static IP address is used, you have to use the specified IP address for LAN setting. In both cases, you have to set appropriate parameters to router.

Also, you are required to set port forwarding parameters.

When a proxy server is used, related setting is required.

The above setting is done as follows.

- A. iNode connection with LAN
- B. iNode connection with AC adapter
- C. iNode power-on
- D. iNode LAN setting

(3) ZigBee connection with iNode

ZigBee wireless sensor network is configured when ZigBee light sensor is connected with iNode. This network forming procedure is called “Network Join”

Network Join procedure is conducted by button operation of ZigBee light sensor near iNode.

(4) Gateway registration

Gateway registration is done by setting required iNode information to VCJ M2M cloud service administration page.

The administration page access requires user name and password.

Required parameters include gateway name (user specified), device address (VCJ specified), etc.

(5) Gateway registration information confirmation and gateway setting

When gateway registration is finished, you are supposed to confirm the set information. After the confirmation, you have to write the registered information to iNode that completes gateway setting.

Accessing the “call-back update page” through the administration page, you click “update” button, then, call-back update is done in several seconds. Then gateway setting is finished.

This operation is required only once after initial iNode start-up.

(6) Sensor registration and parameter setting to VCJ M2M cloud service

Sensor registration and parameter setting is required for the cloud server to collect

ZigBee light sensor data.

This procedure is done by two ZigBee commands, “Bind Request” and “Configure reporting”.

After this setting is done, ZigBee light sensor data up-load to the cloud begins.

(7) Sensor operation check

The sample application is prepared for a user to check sensor data up-load functionality before user application development.

The sample application shows sensor data screen as specified by user’s button click operation.

(8) Gateway stop operation

In order to stop iNode operation, you are required to specify “stop” in the iNode operation command page selected in the administration page.

The iNode operation command page has other commands such as re-start, network status check, initialization of internal data, and internal software status.

This operation brings iNode to a complete stop.

When you start iNode next time, power-on operation is required by AC adapter cable plug in and so forth.

5. User application development

VCJ Sanctuary API is prepared for user application to obtain sensor data and to control sensor parameters through VCJ M2M cloud services.

User application has to integrate OAuth2.0 (draft 30) authorization protocol to use VCJ Sanctuary API. The user application is required to get OAuth parameters from VCJ Sanctuary API. The process to get the parameter is called application registration.

Application registration procedure is done in the VCJ M2M cloud administration page.

Programming interface of Sanctuary API is available on VCJ Web pages.

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