

# FUJITSU Cloud Service K5 - IoT Platform Service Description

March 23, 2017

## 1. IoT Platform Service Overview

Fujitsu provides the following services as the IoT Platform Service.

### (1) Function Overview

#### a. Data Collection

This Service enables the collection and storage of the Customer's data.

##### i. Preparation for Data Collection

The Customer can create resources (\* 2) in the Customer's tenants (\* 1), along with the access codes (\* 3) for such resources.

##### ii. Data Collection and Data Usage

- The Customer can register and read resource data (\* 4) through the API.
- By selecting resource type "Resource (transfer)" in resources creation, the Customer can transfer data to another service without being stored within this IoT Platform Service. (Transfer destination interface only supports HTTP/HTTPS.)

#### b. Event Function

By setting conditions (target resource, data location, detection value, etc.) for detecting data as an event, the Customer can configure an action triggered by the situation where those conditions are met during data registration or update operations. Actions include email notification or launch of a designated API.

Note: Detection conditions cannot be set for resource\_Binary (binary data).

#### c. Access Control

The Customer can limit IP address access to this IoT Platform Service.

##### i. Service Portal Access Control

The Customer can specify, as a means of limiting access to the portal for this IoT Platform Service (hereinafter "Service Portal"), the IP addresses authorized to access to the Customer's account. (Up to 5 per tenant)

##### ii. Resource Access Control

The Customer can specify, as a means of limiting access to resources, the IP addresses authorized for an access code. (Up to 5 per access code)

#### d. Dynamic Resource Controller

This Service provides "recommendations" that can be used as a guide for controlling data collection based on the load on the cloud service. Recommendation is provided as a comparison between the value set by the Customer and the value actually accumulated, about service-related load information (the number of data transactions per second (TPS) and the amount of transferred data per second (BPS)). By using the recommendation, the Customer can collect data in accordance with the load status.

### (2) Service Portal

The Customer can make setting required for using this IoT Platform Service through the Service Portal.

The management functions provided by the Service Portal are as follows:

| Management Function   | Description   |
|-----------------------|---|
| Account               | <ul style="list-style-type: none"> <li>• Create or delete the account for the Service Portal</li> <li>• Reissue a password</li> </ul>   |
| Resource              | <ul style="list-style-type: none"> <li>• Create, change or delete a resource and bulk register resources</li> <li>• Auto-delete data from resources (elapsed time for deletion can be set from 1 to 9,999 days)</li> </ul> <p>Note: Data can be read up to a maximum of one day after the set time.</p> <ul style="list-style-type: none"> <li>• Display, search or download the list of resources</li> </ul> |
| Access Code           | <ul style="list-style-type: none"> <li>• Create, change or delete an access code and bulk register access codes</li> <li>• Display, search or download the list of access codes</li> </ul>  |
| Event                 | <ul style="list-style-type: none"> <li>• Create, change or delete an event</li> <li>• Display and search the list of events</li> </ul>  |
| Log                   | <ul style="list-style-type: none"> <li>• Display, search or download operational logs of the Service Portal</li> <li>• Display a summary of monthly usage</li> <li>• Display detailed monthly usage</li> <li>• Download the date and time usage log files (for billing confirmation)</li> <li>• Display system logs</li> </ul>  |
| Access Control        | <ul style="list-style-type: none"> <li>• Create, change or delete conditions for service portal access control</li> <li>• Create, change or delete conditions for access code access control</li> </ul>   |
| Distribution Settings | <ul style="list-style-type: none"> <li>• Configure, change or delete settings for using the Dynamic Resource Controller</li> <li>• Enable or disable a distribution policy</li> </ul>   |
| Common Settings       | <ul style="list-style-type: none"> <li>• Display or change MQTT password</li> </ul>   |

### (3) API

The Customer can make operations for setting up resources, access codes and events through the API. Authorization of requests is implemented by incorporating access codes with access rights to the resources into the API.

The APIs provided under this Service are as follows:

| Category       | Operation  | Supported Data Format |        | Supported Protocol |            |
|----------------|--|-----------------------|--------|--------------------|------------|
|                |  | JSON                  | Binary | HTTP/HTTPS         | MQTT/MQTTs |
| Management API | Create, update or delete a resource              | ✓                     | ✓      | ✓                  | -          |
|                | Create, update or delete an access code          | -                     | -      | ✓                  | -          |
|                | Create, update or delete an event                | ✓                     | ✓      | ✓                  | -          |
|                | Read lists of resources, access codes and events | ✓                     | ✓      | ✓                  | -          |
| Data API       | Register or read resource data                   | ✓                     | ✓      | ✓                  | ✓          |
|                | Update or delete resource data                   | ✓                     | ✓      | ✓                  | -          |
|                | Transfer resource data                           | ✓                     | -      | ✓                  | ✓          |

✓: Supported; -: Not supported

## 2. Restrictions and notes

- (1) Refer to the following web site for the details on client environments that can access to this IoT Platform Service:

<https://iot-docs.jp-east-1.paas.cloud.global.fujitsu.com/en/manual/index.html>

- (2) The limits of resources are as follows:

| Type of Operation                            | Upper Limit on Data Storage Capacity                    | Limit                        |
|--|---|------------------------------|
| List Read                                    | -   | up to 1,000 per request      |
| Resource Data Registration (JSON)            | 256 Kbytes in JSON format and 256 Kbytes in BSON format | -                            |
| Resource Data Read (JSON)                    | 16 Mbytes in JSON format                                | up to 1,000                  |
| Resource Data Registration (JSON) (Transfer) | 256 Kbytes in JSON format                               | -                            |
| Resource Data Registration (Binary)          | 100 Mbytes in Binary format                             | -                            |
| Resource Data Read (Binary)                  | 100 Mbytes in Binary format                             | only 1 data item per request |
| Resource Data List Read (Binary)             | -   | up to 1,000 per request      |

- (3) Behavior of data registration operations at the same time will depends on the format of the data.

a. JSON data format

If data registration is performed at the same time for the same resource, it will be registered multiple times.

Note that if there are multiple data items at the same times, the following time-specific operations will occur:

| Operation | Behavior  | Notes  |
|-----------|---|--|
| Update    | One of the units of data registered at the specified time is updated. | The item of data to be updated is indeterminate. |
| Read      | All units of data registered at the specified time are responded.     | -  |
| Delete    | All units of data registered at the specified time are deleted.       | -  |

b. Binary data format

If data registration is performed at the same time for the same resource, the data is overwritten.

- (4) MQTT QoS (Quality of Service) accepts 0, 1 or 2, but is not guaranteed if a session fails or if an error occurs during system processing after receipt.
- (5) Retained messages of MQTT connections may be lost due to service maintenance, etc.
- (6) It may not be possible to store data during the maintenance of this IoT Platform Service.
- (7) The recommended amount and frequency for data registration and read is as follows:
- Amount of data per communication: 256 Kbytes
  - Communication frequency (peak)
    - Data API: 100 times per second
    - Management API: Once per second
  - Number of registered resources: 10,000
  - Data storage capacity per resource: 100 Mbytes
  - Number of simultaneous connections: 100

This Service may not be available if any of the above criteria is not fulfilled.

- (8) Excessive use that could cause serious damage to operation of this IoT Platform Service, or use that regularly exceeds the above criteria, may result in denial of access to this Service.
- (9) The following limits apply to events or transfers triggered by data registration:
- Event
 

An event request may be canceled due to the response performance of the API configured in the send destination.
  - Transfer
 

A request may be canceled due to the response performance of the API configured in the transfer destination.
- (10) Under this IoT Platform Service, data may be missing after this Service returns a request receive response. Specifically, with an event send or transfer operation, an attempt is made to send to the specified send destination,

but the request send source does not know whether the send succeeded or failed.

- (11) Only UTF-8 is supported as character codes used by the APIs.
- (12) Limits may be imposed on queries running on full text of large data sets.
- (13) The Customer shall be solely responsible for data collected and stored while using this IoT Platform Service. The Customer hereby gives Fujitsu its consent to Fujitsu's use of data collected in the 'Place of Information Collection' listed below, in order to improve service quality, improve functionality, and collect and disclose statistics of them. In any event, Fujitsu will not use the Customer's actual resource data without the Customer's permission.

| Place of Information Collection            | Target Data   |
|--|---|
| Servers<br>or<br>Communications<br>Devices | <ul style="list-style-type: none"><li>• Communication information (time, access count, traffic)</li><li>• Server performance information (load, resource usage)</li><li>• Server system logs</li><li>• Logs of applications and middleware that make up this IoT Platform Service</li><li>• Frequency and substance of use of the Service Portal, the number of times, types and parameters of the APIs (including internal elements) and the amount of use for disks, etc.</li></ul> |

- (14) This Service is available in following regions:

- Eastern Japan Region 1
- UK Region 1
- Finland Region 1
- Germany Region 1

Footnotes:

- \*1. "Tenant" is a unit that the Customer creates for using this IoT Platform Service. The Customer can have multiple tenants under the same Contract ID.
- \*2. "Resource" is a unit used for registration of the Customer's data in this IoT Platform Service.

The types of resource and their treatment are as follows:

| Resource Type_Data Format | Treatment in This Service  |                                      |
|---------------------------|----------------------------|--------------------------------------|
|                           | Processing at Registration | Processing at Read                   |
| Resource_JSON             | Stored in BSON format      | Output in JSON format <sup>(*)</sup> |
| Resource_Binary           | Stored in Binary format    | Output in Binary format              |
| Resource(transfer)_JSON   | Transferred in JSON format | -                                    |

Note: Comments in JSON format are deleted.

- \*3. "Access code" is the operational authorization for a resource, access code or event setting. The Customer can create subsequent access codes either from the Service Portal or from the API, but the first access code shall be set from the Service Portal.

The type and description of each operational authorization level is as follows:

The operational authorization consists of CDL, L, R and U; these can be granted individually or in combination.

| Operational Authorization | Description  | Operational Targets              | Supported Protocols                     |
|---------------------------|--|----------------------------------|---|
| Create<br>(C)             | <ul style="list-style-type: none"><li>• Authority to create</li><li>• Valid under specified resources<sup>(*)</sup></li></ul>  | Resource<br>Access code<br>Event | HTTP/HTTPS                              |
| Read<br>(R)               | <ul style="list-style-type: none"><li>• Authority to read data stored in a resource</li><li>• Valid for specified resources only</li></ul>                                   | Resource data                    | HTTP/HTTPS<br>MQTT/MQTTS <sup>(*)</sup> |
| Update<br>(U)             | <ul style="list-style-type: none"><li>• Authority to register data in a resource</li><li>• Authority to update data stored in a resource (MQTT/S is not supported)</li></ul> | Resource data                    | HTTP/HTTPS<br>MQTT/MQTTS                |

|               |   |                                  |            |
|---------------|---|----------------------------------|------------|
|               | <ul style="list-style-type: none"> <li>• Authority to delete data stored in a resource (MQTT/S is not supported)</li> <li>• Valid for specified resources only</li> </ul>   |                                  |            |
| Delete<br>(D) | <ul style="list-style-type: none"> <li>• Authority to delete</li> <li>• Valid under specified resources<sup>(*1)</sup></li> </ul>   | Resource<br>Access code<br>Event | HTTP/HTTPS |
| List<br>(L)   | <ul style="list-style-type: none"> <li>• Authority to obtain a resource list under specified resources</li> <li>• Valid under specified resources<sup>(*1)</sup></li> </ul> | Resource<br>Access code<br>Event | HTTP/HTTPS |

\*1: In the event that conflicting authorizations have been set, the highest level of authorization will apply.

\*2: Update time-specific data list for binary data does not support MQTT/MQTTS.

\*4. "Resource data" refers to the data group in the resource.

Supplementary Provision (November 28, 2016)

The present Service Description is effective from November 28, 2016.

Supplementary Provision (January 27, 2017)

The present Service Description is effective from January 27, 2017.

Supplementary Provision (March 23, 2017)

The present Service Description is effective from March 23, 2017.