FUJITSU Cloud Service K5 - IoT Platform Service Description

November 21, 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)" during resources creation, the Customer can transfer data to another service without it being stored within this IoT Platform Service (The 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 ("Service Portal"), the IP addresses authorized to access 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. Recommendations are 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 the settings 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	• Create or delete the account for the Service Portal • Reissue a password
Resource	• Create, change or delete a resource and bulk register resources • Auto-delete data from resources (elapsed time for deletion can be set from 1 to 9,999 days) Note: Data can be read up to a maximum of one day after the set time. • Display, search or download the list of resources

Access Code	• Create, change or delete an access code and bulk register access codes • Display, search or download the list of access codes • Register the client certificate
Event	• Create, change or delete an event • Display and search the list of events
Log	• Display, search or download operational logs of the Service Portal • Display a summary of monthly usage • Display detailed monthly usage • Download the date and time usage log files (for billing confirmation) • Display system logs
Access Control	• Create, change or delete conditions for service portal access control • Create, change or delete conditions for access code access control
Distribution Settings	• Configure, change or delete settings for using the Dynamic Resource Controller • Enable or disable a distribution policy
Common Settings	• Display or change the MQTT password • ON/OFF switching for the save error log function • ON/OFF switching for the CORS function (*5)
Client certificate	• Issue the client certificate

(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

* The data formats that can be registered include CSV format, TEXT format and Binary format with an upper limit of 256 Kbytes in JSON format. Under this Service, Read is only available for data in JSON format because the registered data is converted to and retained in JSON format.

2. Restrictions and notes

(1) Refer to the following website for details on client environments that can access this IoT Platform Service:
https://iot-docs.jp-east-1.paas.cloud.global.fujitsu.com/en/manual/index.html
Service Details Instruction Manual: Section 2.4.2. Tested Operating Environment

(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) The behavior of data registration operations run at the same time will depend on the format of the data.

a. JSON 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 registered at the same time, 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 to.	-
Delete	All units of data registered at the specified time are deleted.	-

b. Binary 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 from 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 service plan selected determines the per-second data API frequency.

・Economy plan: 100 times/sec.
・Standard plan: 200 times/sec.
・Advanced plan: 500 times/sec.*

* The frequency is restricted to 300 times/ second for connections from the same network address.

(8) The recommended volume and frequency of data registration and read is as follows:

a. Amount of data per communication: 256 Kbytes
b. Communication frequency (peak)
  • Management API: Once per second
c. Number of registered resources: 10,000
d. Data storage capacity per resource: 100 Mbytes
e. Number of simultaneous connections: 1,000

(9) This Service may not be available if any of the above criteria is not fulfilled. Excessive use that could cause serious damage to the operation of this IoT Platform Service, or use that regularly exceeds the above criteria, may result in denial of access to this Service.

(10) The following limits apply to events or transfers triggered by data registration:

a. Event

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

b. Transfer

A request may be canceled due to the response performance of the API configured in the transfer destination.

(11) 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.

(12) Only UTF-8 is supported as character codes used by the APIs.

(13) Limits may be imposed on queries running on the full text of large data sets.

(14) 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 from the data. 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 or Communications Devices	• Communication information (time, access count, traffic) • Server performance information (load, resource usage) • Server system logs • Logs of applications and middleware that make up this IoT Platform Service • 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.

(15) This Service is available in following regions:

- Eastern Japan Region 1
- UK Region 1
- Finland Region 1
- Germany Region 1
- Spain Region 1
- US 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(*)
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, R, U, L, P and G; these can be granted individually or in combination.

The client can be authenticated by registering the client certificate issued by the Service Portal as the access code.

Operational Authorization	Description	Operational Targets	Supported Protocols(*1)
Create (C)	• Authority to create • Valid under specified resources(*2)	Resource Access code Event	HTTP/HTTPS
Read (R)	• Authority to read data stored in a resource • Valid for specified resources only	Resource data	HTTP/HTTPS MQTT/MQTTS(*3)
Update (U)	• Authority to register data in a resource • Authority to update data stored in a resource (MQTT/S is not supported) • Authority to delete data stored in a resource (MQTT/S is not supported) • Valid for specified resources only	Resource data	HTTP/HTTPS MQTT/MQTTS
Delete (D)	• Authority to delete • Valid under specified resources(*1)	Resource Access code Event	HTTP/HTTPS
List (L)	• Authority to obtain a resource list under specified resources • Valid under specified resources(*1)	Resource Access code Event	HTTP/HTTPS
Multiple Update (P:put)	• Privileges to attach to multiple resources under the resource URL (directory) which specifies the U privileges	Resource data	HTTP/HTTPS MQTT/MQTTS
Multiple Reference (G:get)	• Privileges to attach to multiple resources under the resource URL (directory) which specifies the R privileges	Resource data	HTTP/HTTPS MQTT/MQTTS

*1: This can be set also by restricting the protocols that may be allowed for access.

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

*3: Updates to a time-specific data list for binary data does not support MQTT/MQTTS.

*4. “Resource data” refers to the data group in the resource.

*5. ”CORS (Cross-Origin Resource Sharing)” is a structure that collects data from servers other than those used to read HTML on the Web browser.

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