ThingsKit IoT Platform

ThingsKit IoT platform is a powerful, flexible and easy-to-use **IoT solution**, designed to provide enterprises with one-stop **IoT services** and accelerate their intelligent transformation.

Today, **IoT cloud platform experts** will explain to you the technical solutions of ThingsKit IoT platform. The following is a detailed introduction to ThingsKit IoT platform:

Platform Overview

ThingsKit IoT platform is a low-code IoT platform for small and medium-sized enterprises that is secondary developed based on Thingsboard open source IoT platform.

It provides a product service matrix of N+1+N (N terminal products + 1 IoT platform + N industry solutions) to help enterprises quickly build a stable and reliable IoT system, saving time and manpower costs.

ThingsKit IoT Platform

Platform architecture

ThingsKit IoT platform can provide universal PaaS services across different devices and data sources, and play an intermediary role in the entire IoT architecture. It links all interactions between the perception layer and the application layer, connects and manages the IoT device end downward and completes the collection and storage of perception data, and provides application developers and system integrators with unified data interfaces and common module tools for application development.

On the basis of realizing the "Internet of Things", the data generated during the frequent interaction between the perception layer and the application layer has the characteristics of large volume, multiple types, and dynamic rolling.

ThingsKit Platform

As the core hub in the industrial chain, ThingsKit IoT platform is the soil for application integration and data value incubation.

In addition to providing infrastructure services to support data exchange between devices, it also greatly advances the data empowerment process through the processing, analysis and visualization of platform data, giving full play to the scale effect, realizing data production and processing, and facilitating the rapid application of data.

This simplifies the complexity of IoT solutions and reduces the cost of solutions, acting as an "acceleration layer" to promote the landing speed and progress of each layer in application scenarios.

Main features

1. Open architecture and multiple access methods:

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ThingsKit IoT platform supports multiple device access methods and data transmission protocols, including Wi-Fi, Modbus, 4G and other communication methods, as well as MQTT, CoAP, HTTP and other data transmission protocols. This open architecture enables ThingsKit to easily connect and manage various IoT devices to meet the diverse needs of users.

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The platform provides comprehensive device management functions, including device registration, configuration, monitoring and maintenance. Through ThingsKit's device management function, users can monitor device status in real time, perform firmware upgrades and remote configuration, greatly improving the operating efficiency and reliability of the device.

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2. Powerful data processing capabilities:

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ThingsKit has powerful data collection, storage, analysis and visualization capabilities. The platform can collect data from various devices and sensors in real time, store and analyze them.

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Through the visual dashboard tool, users can intuitively display real-time and historical data, device status and alarm information, so as to facilitate monitoring and control.

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3. High security and privacy protection:

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The ThingsKit platform focuses on data security and privacy protection, and adopts multiple security mechanisms, including data encryption, access control and identity authentication. These measures ensure the security and privacy of user data, allowing users to store data on the ThingsKit platform with confidence.

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4. Flexible rule engine:

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The ThingsKit platform is equipped with a powerful rule engine that allows users to define and execute automated tasks. By setting trigger conditions and actions, the platform can realize automated device control, alarm notification and data processing, thereby improving the response speed and intelligence level of IoT solutions.

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5. Rich development tools and services:

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ThingsKit platform provides a complete set of development tools and services, which reduces the difficulty and threshold of IoT project development. Developers can use the low-code or no-code application development functions provided by the platform to quickly realize the innovation of IoT applications and shorten the project development cycle.

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6. High reliability and high scalability:

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ThingsKit platform adopts cloud computing technology and has high reliability and high scalability. The platform can support large-scale device access and data processing to meet the needs of complex IoT projects.

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ThingsKit Internet of Things

Function points

1. Device access:

Massive device connections are achieved through industry standard IoT protocols (MQTT, CoAP and HTTP).

2. Remote control:

Using PRC API, the server can accurately control the device and the device can actively send request notifications to the server.

3. Rule engine:

The platform rule engine is designed as a visual service component, which is simple and easy to use, flexible and scalable. It is the core processing engine of the ThingsKit platform.

4. RBAC permissions:

Permission control adopts RBAC (role-based access control), which encapsulates complete basic permission functions such as users, roles, menus, and organizations.

5. Application support:

Provides a rule engine to flexibly configure API push or MQ message queues, transfers data to the business level, shields the complex characteristics of the IoT level, allows enterprises to focus on business application development, shortens the launch cycle of **IoT solutions**, and saves enterprises a lot of R&D time and costs.

6. Security assurance:

Supports **MQTT** SSL configuration, HTTP SSL configuration, CoAP DTLS configuration; supports access tokens authentication mode.

China Smart Internet of Things - ThingsKit IoT Platform Solution

Application scenarios and solutions

ThingsKit IoT platform has a wide range of applications in multiple industries and scenarios, including but not limited to the following aspects:

1. Smart agriculture:

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Agricultural standardized production monitoring: real-time collection of key data in agricultural production, such as temperature, humidity, carbon dioxide content, soil temperature, soil moisture content, etc., to grasp various data of agricultural production in real time.

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Animal identification traceability: realize integrated full-process monitoring of all links, achieve effective combination of animal breeding, epidemic prevention, quarantine and supervision, and quickly and accurately trace and handle animal epidemics and animal product safety incidents.

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2. Smart Water Affairs:

Including traditional nearshore pollution monitoring, ground online detection, satellite remote sensing and manual measurement, providing a unified **data collection**, data transmission, data analysis and data release platform for water quality monitoring, and providing experimental and verification methods for lake observation and disaster mechanism research.

3. Smart Elevator:

The sensors installed on the periphery of the elevator collect data such as normal operation, top rush, bottom squat, power outage, and people locked in the elevator, and transmit the data to the Internet of Things platform through the wireless transmission module.

4. Smart Power:

Based on the mobile communication network, the real-time collection of power and quantity information, current and voltage information, power supply quality information and on-site metering device status information of all power supply points and receiving points is realized, as well as remote control of power load.

5. Enterprise Card:

Based on RFID-SIM card, it provides access control, attendance and consumption management systems for large, medium and small enterprises and institutions.

6. Personal Health:

Different sensors can be installed on people to monitor their health parameters and transmit them to relevant health care centers in real time. If there are any abnormalities, the health care center will remind them to have a physical examination through mobile phones.

7. Smart Home:

Based on computer technology and network technology, it includes various consumer electronics products, communication products, information appliances and **smart homes**, etc., to complete home appliance control and home security functions.

8. Smart Logistics:

Through the data transmission channel provided by the GPRS/4G network, the communication between the logistics vehicle terminal and the logistics company dispatch center is realized, and **remote vehicle** dispatch and automated warehouse management are realized.

China ThingsKit IoT Platform

9. Smart Security:

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Airport anti-intrusion: laying sensor nodes, covering the ground, fences and low-altitude detection, to prevent aggressive intrusions such as climbing over, smuggling, terrorist attacks, etc.

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Safe city: Use monitoring probes to realize intelligent analysis of image sensitivity and interact with 110, 119, etc., so as to build a harmonious and safe urban living environment.

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Urban management: Use geocoding technology to realize the classification and item management of urban components, and realize the precise positioning of urban management issues.

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10. Smart environmental protection:

Transmit various environmental monitoring information collected by traditional sensors to the monitoring center through wireless transmission equipment for real-time monitoring and rapid response.

11. Smart medical care:

Telemedicine, drug query, health supervision, first aid and visit video monitoring, etc.

In addition, ThingsKit IoT platform also provides targeted solutions such as online monitoring and early warning of dangerous buildings and **smart monitoring** of water sources. For example, the online monitoring and early warning solution for dangerous buildings uses a variety of high-precision sensors and IoT technologies to monitor the structures of some old houses in real-time online. Small variables such as tilt, settlement, and cracking are monitored online.

At the same time, it provides effective data as a basis for evaluating the safety and stability of the house, and reminds house users and relevant units to deal with safety hazards of the house in a timely manner. The intelligent monitoring system for water sources is specially designed to solve the problems of water source management.

It can realize functions such as remote control of the start and stop of water pumps and remote monitoring of the operating status and operating parameters of water sources, which greatly improves the efficiency of water source management and significantly reduces management costs.

User Guide and Docking Process

1.

   Register an Account: Visit ThingsKit official website and register a personal or corporate account.

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   Create a Project: After logging in, create a new project on the project management page.

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5.

   Connect Device: Select the appropriate protocol and device type, and configure the device connection parameters.

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7.

   Data Collection and Analysis: Collect device data through data streams, and use powerful data analysis tools for data mining and analysis.

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   Application Development: Based on the development framework and APIs provided by ThingsKit, develop applications according to actual needs.

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In the process of connecting to the gateway, ThingsKit IoT platform mainly realizes data interconnection and interoperability through steps such as device collection, data formatting and network transmission.

IoT gateways need to provide northbound and southbound interfaces, which are used to connect to the cloud and device ends respectively.

Through protocol conversion and management functions, **IoT gateways** can realize data interaction and interconnection between different devices and sensors.

At the same time, IoT gateways also need to have high security to ensure the reliable operation of **IoT systems**.

Platform Advantages and Value

ThingsKit IoT platform has become one of the preferred IoT platforms for many developers and enterprises due to its powerful functions, flexible architecture and wide range of application scenarios. Its main advantages include:

1. One-stop solution:

ThingsKit provides a wealth of functions such as **device management**, data analysis and application development to help enterprises build efficient and stable IoT systems.

2. Fast development and deployment:

The platform supports low-code or no-code application development functions, which reduces the development difficulty and threshold of IoT projects and shortens the project development cycle.

3. High customizability:

ThingsKit can provide personalized solutions according to the needs of different industries to meet the actual needs of enterprises.

4. High reliability and security:

The platform adopts cloud computing technology with high reliability and high scalability, and adopts multiple security mechanisms to ensure the security and privacy of user data.

The application value of ThingsKit IoT platform lies in its ability to help enterprises achieve intelligent transformation and digital transformation. By collecting, storing and analyzing data from various devices and sensors in real time, the platform can provide valuable data support for enterprises, helping them optimize production processes, improve production efficiency, reduce costs and enhance market competitiveness.

At the same time, the platform also supports multiple languages and frameworks to facilitate enterprises to develop applications according to their own needs, further expanding their business scope and innovation capabilities.

In summary, ThingsKit IoT platform is a powerful, flexible, easy-to-use and highly customizable IoT solution.

With its unique advantages and wide range of application scenarios, it has become one of the preferred platforms for many developers and enterprises.

In the future development of the **Internet of Things**, ThingsKit will continue to play its important role and bring more value and innovation opportunities to enterprises.

About IoT Cloud Platform

IOT Cloud Platform (**blog.iotcloudplatform.com**) focuses on IoT design, IoT programming, security IoT, industrial IoT, military IoT, best IoT projects, IoT modules, embedded development, IoT circuit boards, IoT solutions, Raspberry Pi development and design, Arduino programming, programming languages, RFID, lora devices, IoT systems, sensors, smart homes, smart cities, new energy, semiconductors, smart hardware, **photovoltaic** solar energy, lithium batteries, chips and other scientific and technological knowledge.

FAQs

The following are the frequently asked questions and answers about ThingsKit IoT platform:

Which browsers does ThingsKit IoT platform support?
ThingsKit IoT platform supports mainstream browsers such as Chrome and Firefox.
What are the minimum server configuration and system requirements for ThingsKit IoT platform?

Specific configuration requirements vary depending on the deployment environment, but usually include a certain amount of CPU, memory and storage space. For production environment deployment, it is recommended to contact customer service to evaluate whether the server configuration is reasonable. In terms of system requirements, ThingsKit IoT platform supports running on multiple operating systems, including localized environments such as Kirin V10 operating system.

What is the default port number of the ThingsKit IoT platform?

The default port number of the ThingsKit IoT platform can be adjusted according to the actual situation. For the specific port number, please refer to the platform documentation or consult technical support.

What is the JDK version supported by the ThingsKit IoT platform?

The ThingsKit IoT platform supports JDK 11.0.12.

Why are there no device management, rule engine, data center and other functions in the left menu?

Please check whether you are logged in with a super administrator account. The super administrator account does not have these functions by default. You need to create a tenant first and then use the tenant account to log in to the platform to use these functions.

When configuring scene linkage, why can't the execution action select alarm output?

Possible reasons include that only one alarm output can be selected from multiple execution actions, or the trigger is not configured correctly. Please check whether other actions have selected alarm output and ensure that the trigger is configured correctly.

After configuring the report configuration execution in the data center, check the report export and find that there is no data in the excel export and report viewing. Why?

Please check whether the "recent time" of the report configuration is within the "report cycle" of the device. If the device does not report data within the period, the generated report export will have no data.

After filling in the rtsp video stream address in the video configuration of the video center, the video cannot be played normally. Why?

Please check whether the video stream is in H264 format. The ThingsKit IoT platform supports H264 format video stream playback. If the video stream is in H265 format, please convert it to H264 format before playing it.

Does the ThingsKit IoT platform support cutover upgrades?

In cluster mode, the ThingsKit IoT platform supports cutover upgrades. However, the nodes of the upgraded microservice components cannot be less than 2, and ensure that the microservice components of the entire business remain intact during the upgrade process to avoid affecting normal business.

How to configure the ThingsKit IoT platform to start automatically?

The startup and startup configuration of the ThingsKit IoT platform may vary depending on the operating system. It can usually be achieved by modifying the system service configuration file or using the system's built-in task scheduling tool. For specific configuration methods, please refer to the platform documentation or consult technical support.

How to create a tenant on the ThingsKit IoT platform?

In the ThingsKit IoT platform, the steps to create a tenant are as follows:

Log in to the super administrator account.

Enter the tenant list page.

Click the "Add Tenant" button.

In the Add Tenant interface, you need to add or select an existing tenant configuration and tenant role first.

Fill in the basic information of the tenant, such as name, administrator account, etc.

Click the Confirm or Save button to complete the creation of the tenant.

What operating systems does the ThingsKit IoT platform support?

The operating systems supported by the ThingsKit IoT platform include but are not limited to:

openEuler: The ThingsKit IoT platform is developed based on the openEuler operating system, which has the advantages of high reliability, high security and ease of use. openEuler is an open source operating system that supports multiple processor architectures and is suitable for a variety of application scenarios.

Trust-based localization environment: Such as the Kirin V10 operating system, the ThingsKit IoT platform also supports running in a trust-based localization environment to meet localization needs.

What are the commonly used chart types for data visualization on the ThingsKit IoT platform?

Common chart types include line charts, bar charts, pie charts, scatter charts, heat maps, maps, dashboards, radar charts, etc. These chart types can intuitively display information such as data trends, proportions, distributions, and correlations.

How to choose the right chart type to display data?

When choosing a chart type, it should be determined based on the characteristics of the data and the display requirements. For example, a line chart is suitable for displaying the changing trend of time series data; a bar chart is suitable for comparing the size of data of different categories; a pie chart is suitable for displaying the proportional distribution of data; a scatter chart is suitable for displaying the correlation between data, etc.

In data visualization, how to adjust the title, axis labels, and legends of the chart to enhance readability?

You can use clear and concise titles to describe the subject of the chart; use clear axis labels to indicate the meaning and unit of the data; and use easy-to-understand legends to explain the meaning of different data series or categories. In addition, you can adjust properties such as font size, color, and style to improve the overall readability of the chart.

What problems may be encountered during data visualization?

Problems that may be encountered during data visualization include data quality issues (such as missing, incorrect or inconsistent data), data security issues (such as data leakage or unauthorized access), selection of appropriate visualization tools, errors in data interpretation, poor user experience, etc. To solve these problems, data cleaning, data verification, data encryption, access control and other measures can be taken, and appropriate visualization tools and design principles can be selected to ensure the clarity, accuracy and consistency of the charts.

Does ThingsKit IoT platform support custom data visualization styles?

Yes, ThingsKit IoT platform supports custom data visualization styles. Users can adjust the color, line type, font and other properties of the chart according to their needs and preferences to create more personalized and attractive visualization effects.

How to ensure the accuracy and reliability of data when visualizing data in ThingsKit IoT platform?

In order to ensure the accuracy and reliability of data, when visualizing data in ThingsKit IoT platform, the following measures can be taken: cross-validation and sampling of data; comparative analysis using multiple data analysis methods; understanding the source and collection process of data; processing of outliers and missing values, etc. These measures help to improve the accuracy and reliability of data, thereby ensuring the reliability of visualization results.

How is the data visualization performance of ThingsKit IoT platform?

The data visualization performance of ThingsKit IoT platform depends on multiple factors, including data volume, server configuration, network bandwidth, etc. Under normal circumstances, the platform can provide smooth and efficient data visualization services. However, when the data volume is large or the server configuration is low, problems such as slow chart loading or user operation jams may occur. In order to improve performance, technical means such as data sharding, data caching, and data preprocessing can be adopted.

What types of data storage does ThingsKit IoT platform support?

The ThingsKit IoT platform supports multiple types of data storage, including structured data, semi-structured data, and unstructured data. This can meet the diverse data storage needs generated by IoT devices.

How is the capacity and scalability of data storage?

The data storage capacity and scalability of ThingsKit IoT platform are good. As the number of IoT devices increases and the amount of data grows, the platform can dynamically expand storage capacity to ensure data integrity and availability.

How to ensure the security and privacy protection of data storage?

The ThingsKit IoT platform adopts strict data security measures, including data encryption, access control, data backup and recovery, to ensure the security and privacy protection of data storage. At the same time, the platform also complies with relevant data protection regulations and standards.

How is the performance of data storage?

The data storage performance of ThingsKit IoT platform is efficient. The platform adopts advanced storage technology and algorithms to optimize the speed of data storage and reading and improve data processing efficiency.

Does it support distributed storage?

Yes, ThingsKit IoT platform supports distributed storage. This ensures that data is distributed and stored on multiple nodes, improving data reliability and fault tolerance. At the same time, distributed storage can also meet the storage needs of large-scale IoT data.

How to manage and maintain data storage?

ThingsKit IoT platform provides intuitive data storage management and maintenance tools. Users can use these tools to monitor the status, performance and usage of data storage, and make corresponding adjustments and optimizations. In addition, the platform also provides data backup and recovery functions to ensure data integrity and recoverability.

Does data storage support real-time processing and analysis?

Yes, the data storage of ThingsKit IoT platform supports real-time processing and analysis. The platform can receive data generated by IoT devices in real time, and process and analyze it to provide real-time data insights and decision support.

Does data storage support integration with other systems?

The data storage of ThingsKit IoT platform has good integration. The platform supports integration with other IoT platforms, big data platforms, cloud computing platforms and other systems to achieve data sharing and exchange. This helps users achieve seamless data flow and collaborative work between different systems.

Why are there fewer functions in the left menu in the ThingsKit IoT platform?

If you log in with a super administrator account, the functions in the left menu are indeed fewer. Because the super administrator account does not have functions such as device management, rule engine, and data center. At this time, you need to create a tenant first, and then use the tenant account to log in to the platform, and you can use these functions.

When configuring scene linkage on the ThingsKit IoT platform, why can't the execution action select alarm output?

There may be two reasons: First, among multiple execution actions, only one alarm output can be selected. Please check whether an action has selected the alarm output; second, the trigger is not configured correctly.

After configuring the report in the data center of the ThingsKit IoT platform, why is there no data in the report export?

Please check whether the "recent time" of the report configuration is within the "report cycle" of the device. If it is within the cycle, it means that the device in the corresponding time period has not reported data, so the generated report export has no data.

What happened to the failure to upload pictures on the ThingsKit IoT platform?

Please check whether minioName and minioPass are correct. If they are correct, check whether bucketName meets the specifications, such as length, character composition, and beginning and ending characters.

How does ThingsKit IoT platform perform data change analysis?

When performing data change analysis on ThingsKit IoT platform, you can first confirm the authenticity of the data, and then analyze whether the extent of data decline or growth is normal. Then, you can use relevant business formulas or models (such as GMV=UVconversion ratecustomer price) to find out which indicator has a problem and optimize it. At the same time, it is also necessary to consider the impact of external factors on the data.

What are the main data analysis tools of ThingsKit IoT platform?

ThingsKit IoT platform itself is an IoT platform that provides basic functions such as device access and data management. For data analysis tools, it may integrate some built-in data

analysis modules or reporting tools. In addition, users can also combine third-party data analysis tools (such as Excel, Power BI, etc.) for more in-depth data analysis.

What data collection methods does ThingsKit IoT platform support?

ThingsKit IoT platform supports multiple data collection methods, including but not limited to device direct connection collection, gateway forwarding collection, API interface docking collection, etc. The choice of specific collection method depends on the type of device, communication protocol and business needs.

How to ensure the accuracy and completeness of data collection on ThingsKit IoT platform?

To ensure the accuracy and integrity of data collection, the following measures can be taken: First, ensure the accuracy and stability of data collection on the device side; second, use reliable communication protocols and encryption technologies during data transmission to prevent data loss or tampering; finally, perform data verification and anomaly detection on the platform side to promptly discover and handle data errors.

How to set the data collection frequency of t