UDC 004.72

DESIGN OF IOT NETWORK

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Annotation. The design of IoT network structure on Google Cloud IoT platform are given. GPRS-A LTE as controller is discussed.

Key words. IoT design, Google Cloud IoT platform, GPRS-A LTE module.

Solutions for the Internet of Things (IoT) network - this is a set of resources and components divided by IoT devices, IoT platform and IOT applications. Events, analytical information and actions are data streams and processing conveyors that are performed in these structural parts.

Consider the process of building the Internet of Things (IoT) network to control the temperature and energy in the building, including the device (sensors), a microcontroller, a network gateway, the Google Cloud IoT cloud platform (CP), a mobile device. The controller, depending on its configuration, performs the functions of collecting information from the accounting device, its accumulation and subsequent transfer to the server, from where it becomes available to the end user.

The gateway is required to convert and transmit data to a cloud platform (OP). In the cloud environment, the server is involved. OP server contains measurement databases, site.

Cloud Internet of Things platform - placed in the cloud managed service, which acts as a message center for bilateral relations between the Internet application of things and devices that it controls. The functionality of the platform allows to create scalable, full-featured internet solutions, for example, to monitor the use of an office building. The platform provides sensors a secure communication channel to send data. Authentication for a separate sensor allows to safely connect to the platform and safely control each device. A wide range of device features supports multiple authentication types. SAS token-based authentication allows to quickly start working with the Internet solving things. Separate authentication based on X.509 certificate is used for secure authentication based on standards.

In the database, the received data from the device (serial number of the instrument, the network address of the device, the energy measurement unit, the measured heat value, the pressure indication, the type of inputs G3/G4, the type of temperature sensors, etc.) is stored.

The site serves as a means of displaying captured and obtained results. On each of the mobile devices, it can install an application that allows to display the information you are interested in the cloud database through the site. To ensure remote removal, the instruments can be equipped with an LTE interface.

The Google Cloud IoT platform includes a number of services with which you can create an IoT network. Cloud IoT Core is a fully managed service for easy and secure connection, as well as management and reception data from various devices. Cloud Pub/Sub is a service that processes information about events and provides real-time thread analytics. Cloud Machine Learning Engine, which allows to create learning models and use data obtained from IoT devices [1].

As a microcontroller and gateway, we will apply a GPRS-A LTE - a universal monitoring module that can work automatically or within the system of alarm system, as well as building automation systems [2]. The device is equipped with a module that supports data transmission in LTE technology.

Using a cellular network (TCP), the module can exchange data with devices in IoT). This allows you to integrate the module with automation and data collection systems. The module can send to the devices to IoT information about the status of inputs and outputs, as well as values from analog inputs and from the 1-Wire bus. In response, the module can finalize requests for blocking / canceling inputs and on / off the outputs of the module.

List of literature sources:
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