ANALYSIS OF THE METHODS OF CHOOSING NETWORK STRUCTURE OF THE INTERNET OF THINGS

Sadchikova Svetlana Alexandrovna,
Candidate of Technical Sciences, Associate Professor, Department of Telecommunications Engineering
Akhmedov Dilshod Rakhimovich,
Master of 415-20 TI group

Annotation
The Internet of Things (IoT, Internet of Things) is a system of unified computer networks and connected physical objects (things) with built-in sensors and software for collecting and exchanging data, with the possibility of remote control and management in an automated mode, without human intervention. The following article is devoted to the analysis of the methods of choosing network structure of the internet of things.

Key words: internet of things, channel, security, IoT ecosystem, information system, equipment, application.

The term "Internet of Things" today carries a lot of definitions, for example, as described as one of market leaders of corporate applications SAP, Internet of Things is a world in which physical objects organically integrated into the information network, and where these physical objects can actively participate in business processes. Services using the Internet can interact with these "smart objects", change their state and query any related with them information, taking into account security issues and privacy. Or International Data Corporation (IDC) is an analytical company specializing in information technology market research, gives the following concept. Internet of Things is a network with uniquely identifiable endpoints tthat communicate with each other in two directions via TCP/IP protocols for exchange data through the channels of the global Internet without human intervention.

Devices included in the Internet of things - any autonomous devices, sensors, sensors, connected to the Internet, which can be monitored and/or controlled remotely. IoT ecosystem - all components that enable businesses, governments and users to connect their IoT devices, including control panels, toolbars, networks, gateways, analytics, data storage and security.

The Internet of Things market is very promising develops in areas such as housing and communal services, energy, logistics, medicine, security, retail, banking, agriculture, industry.

Internet of Things Architecture

To understand the complexity of existing solutions in the field of the Internet of things, it is necessary to have architecture that provides the basic components and their relationships.

Industrial (often Industrial) Internet of Things (Industrial Internet of Things, IIoT) - Internet of things for corporate / industry applications - a system of integrated computer networks and connected industrial (production) facilities with built-in sensors and software for collecting and exchanging data, with the possibility of remote control and control in an automated mode, without human intervention.

In industrial applications, the term "Industrial Internet" is used. Further in the text, to simplify perception, instead of writing “industrial Internet of things”, the term “Internet of things” is used in this context.The principle of operation of the technology is as follows: initially, sensors, actuators, controllers and human-machine interfaces are installed on key parts of the equipment, after which information is collected, which subsequently allows the company to acquire objective and accurate data on the state of the enterprise. The processed data is delivered to all departments of the enterprise, which helps to establish interaction between employees of different departments and make informed decisions.

In addition, companies can replace rapidly outdated paper documents, as well as accumulate expert knowledge of specialists.

The information obtained can be used to prevent unplanned downtime, equipment breakdowns, reduce unscheduled maintenance and disruptions in supply chain management, thereby allowing the enterprise to operate more efficiently.

When processing a huge array of unstructured data, their filtering and adequate interpretation is a priority for enterprises. In this context, the correct presentation of information in a user-friendly form is of particular importance, for which today the market offers advanced analytical platforms designed to collect, store and analyze data on technological processes and events in real time.To avoid downtime and to maintain safety in the enterprise, it is necessary to implement technologies that allow detecting and predicting risks. Continuous proactive monitoring of key indicators makes it possible to identify the problem and take the necessary measures to solve it. For the convenience of operators, modern systems allow you to visualize the conditions of the flow of technological processes and identify factors that affect them using any web browser. Operational analysis helps users find the cause of problems faster.

These solutions turn production data into actionable information that is essential for the safe and sound management of a plant.

The introduction of such technologies enables enterprises from various sectors of the economy to receive certain benefits: increase the efficiency of the use of production assets by 10% by reducing the number of unplanned downtime; reduce maintenance costs by 10% by improving procedures for predicting and preventing catastrophic equipment failures and identifying inefficient operations; increase productivity by 10%, improve energy efficiency and reduce operating costs by 10% through more efficient use of energy.

Thus, new technologies allow enterprises of various industries to achieve significant competitive advantages. The Industrial Internet of Things is fundamentally changing the entire economic model of supplier-consumer interaction. This allows:

- automate the process of monitoring and managing the life cycle of equipment;
- organize effective self-optimizing chains from enterprises-suppliers to companies-end consumers;
- move to "sharing economy" models and much more.

In the most advanced cases, the industrial Internet of things allows not only to improve the quality of equipment technical support using advanced telemetry tools, but also to ensure the transition to a new business model for its operation, when the equipment is paid for by the customer upon the fact of using its functions.

The introduction of network interaction between machines, equipment, buildings and information systems, the ability to monitor and analyze the environment, the production process and its own state in real time, the transfer of management and decision-making functions to intelligent systems lead to a change in the "paradigm" of technological development, also called "fourth industrial revolution".