

Application and Research of Big Data Technology in Power Communication Network

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Abstract : In the new era, the application of big data technology to power communication network is the need of the times, which plays a core role. Electric power enterprises need to update their own development thinking mode and apply this technology effectively to promote their better development. Based on this, the paper analyzes the characteristics of power communication network and the application value of big data technology in power communication network, and puts forward the application strategy of big data technology in power communication network for reference.

Keywords : Big Data Technology; Power Communication; Application

With the rapid development of China's power industry, big data technology and other technologies have been widely used in the power communication network, so that the functional advantages of power communication have been brought into play to a certain extent. But now some enterprises do not pay enough attention to the big data technology, which limits the power communication function. This requires that when the power enterprises establish the power communication network, they must fully understand the big data technology, adopt scientific means, and improve the intelligent level of the power communication network.

1. Features of electric power communication network and functional scope of communication management system

The electric power communication network consists of backbone and terminal communication network. Optical fiber communication is used to transmit backbone network, so as to realize data communication, video and other functions. It is the carrier of power dispatching production and information management. It undertakes the important task of communication and transmission of various kinds of information. Its structure is very complex and has the characteristics of decentralized deployment, which expands the range of account data information of power communication network equipment^[1]. The system function scope of electric power communication network includes resource management, implementation monitoring and operation control. Among them, resource management is the premise, mainly to protect data security, and provide data analysis for relevant application modules of the system. In the process, it also includes the inspection of information resources and other functions. Real time monitoring is mainly to strengthen the management of equipment network and the security of electric power operation environment to centralized monitoring, find problems on time, and make early warning, so that the relevant personnel and technology can take effective measures to solve problems; operation control needs to define the relevant functions from the aspects of task scheduling, fault diagnosis and so on. Through operation management and control, the communication process can be more standardized and information sharing can be realized more smoothly, so as to improve the quality and technical level of communication operation management.

2. Application value of big data technology in power communication network

From the perspective of China's power industry, power communication network is a very important part, which plays a great

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role in promoting the development of the power industry. As a product of the new era, big data technology has strong functions in openness, interactivity and other aspects. Its effective application in the power communication network can expand the functional scope of the power communication network. It can also systematically collect the relevant parameter information of the whole network communication equipment, improve the power operation level, and is more conducive to the establishment of the system integration mechanism, so as to make the power management and operation more efficient to a higher level of development^[2]. At the same time, the application of big data technology speeds up the upgrading of power communication network functions, and can be more efficient in comprehensive application and sharing of all kinds of information. For example, the application of big data technology can realize the closed-loop management function, and the most important thing is to optimize the configuration of network resources and ensure the security of the network. In addition, the use of big data technology can also reduce power loss. In power transmission, there will inevitably be different degrees of power loss. With the help of big data technology, we can analyze the power loss of power grid equipment, find out the causes of power loss, and reduce line loss. In short, the application of big data technology to power communication network can improve the comprehensive performance of power communication network and ensure the effect of power service^[3].

3. Application and strategy of three big data technologies in electric power communication network

3.1 Application of big data technology

3.1.1 Protocol adaptation module

In this module, the protocol register is configured, and the communication protocols are stored in the register, so that several communication protocols can be compatible at the same time, and the communication protocols can be matched scientifically according to the message format and related attributes. In addition, the first mock exam is equipped with a communication repeater. If the communication object is reflected in the set time range, it can generate test messages in the module to send. Otherwise, it is necessary to re select the communication protocol. If it fails to get the correct response, it must make an error warning to the manager^[4].

3.1.2 Data separation and storage module

In the whole power communication system, the function of the module is to receive and copy communication data. Its workflow includes data identification, classification, and analysis and so on. As the basic part, data recognition is to obtain data according to data types and related communication protocols, and extract the required data information combined with data analysis results. In the above operations, the acquisition of protocol information mainly depends on the protocol adaptation module, which can be used to determine the type of data receiver. Data classification is to classify the relevant data supporting power system operation according to the type of data, and store them in the corresponding memory to ensure the data utilization effect^[5]. In addition, in the power communication, it is inevitable to face the interference from the outside world, there are various types of interference signals, resulting in noise, leading to low quality of communication, at this time, it is necessary to do de-noising on the data. In de-noising, we need to count the characteristics of each data, remove the deviation data and store it scientifically. When storing data, it is necessary to design the repository according to the different characteristics of each database, and the data result patterns used by each database must be different.

3.2 Application strategy

First, innovate the application ideas of big data technology. In order to use big data technology more scientifically in power communication network, we need innovative ideas, which is a very important point. Electric power enterprises should always keep a clear “mind”, have a new understanding and understanding of big data technology, make clear the important relationship between big data technology and their own development, make scientific judgment, and carefully plan and expand the function of electric power communication network, in order to form a network chain integrating data collection, extraction, detection and analysis. In addition, to innovate the application ideas, it is also necessary to speed up the informatization and intelligent construction of the power communication network, so that the power communication network can play a diversified function, which is the key consideration of the majority of power enterprises when using big data technology.

Second, update and improve the application system of big data technology. If power enterprises want to apply big data technology to power communication network more efficiently, it is also very critical to improve the application system. Power enterprises can set up “big data management and control center” and integrate relevant resources with the help of big data

technology. At the same time, we should also pay attention to the construction of operation mechanism, which can build a number of operation mechanisms such as data collection and storage, and improve the application level of various data in power communication network. In addition, we need to further update the power communication network monitoring and maintenance system, with the help of big data technology, which can make the power grid maintenance more convenient and efficient ^[6].

Third, broaden the application scope of big data technology. When power enterprises apply big data technology, they also need to expand the application scope of big data technology in combination with the specific situation, so as to maximize the role of big data technology in the power communication network. It is necessary to pay attention to the security protection of the database. We can build firewall and other related security protection means to prevent the database information from being leaked and tampered, and make the data system more secure and reliable. In order to broaden the application scope of big data technology, we must also work hard on the data architecture of TMS system, including the development and application of basic data, business data and other data functions, in order to improve the utilization effect of power grid data and provide data support for the efficient operation of power communication network. In addition, to broaden the application scope of big data, we need to make a more systematic analysis on the intelligent level of big data technology. In addition to building a big data management and control center, we also need to strengthen the connection between all levels, so as to make the role of big data technology play a more effective role.

4. Conclusion

To sum up, big data technology has many functional advantages, such as strong integration, and it plays a very important role in the power communication network, which can improve the operation level of the power communication network and make the comprehensive functions of the power communication network more scientific. In the actual application of this technology, power enterprises must analyze its value and function, keep pace with the times, and innovate the application ideas of big data technology, so as to constantly update the application system of big data technology, broaden its application scope, and improve the security and stability of power communication network.

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