

# DESIGNING THE ARCHITECTURE OF A BIG DATA PLATFORM USED TO IMPROVE THE QUALITY OF TELECOMMUNICATIONS SERVICES

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**Annotation:** The article provides a brief overview of telecommunications services and areas of application. Information on the quality of telecommunications and measures to improve it. Big data platform and its design methods are given.

**Keywords:** Telecommunications, big data, transport, IP-telephony, NoSQL technologies, mathematical model.

The level of development of telecommunication systems and networks is ensured by the development of information transmission and processing technologies. The development and integration of these technologies is most clearly expressed in the process of evolution of communication networks and services. An integral part of this process is the process of developing methods for analyzing and constructing telecommunications systems. Communication networks are an integral part of modern life. In society, almost all processes and relationships in all areas of human activity depend on their functioning. Therefore, special attention is paid to the state of communication networks and their level of development. This is reflected in the creation of international organizations working in the field of standardization, the development of local standards and industry documents in this field. The wide range of capabilities of modern communication networks creates a material basis for the development and penetration of various services. In the process of emergence and development of services, the requirements for the quality of performance of communication networks, their reliability and security are increasing.

The process of service development leads to redistribution of traffic in common communication networks, which affects the quality of service and the income of communication operators. The level of importance of the tasks to be solved, as well as the high rate of development of technologies and services require adequate development of methods of analysis, planning and design of modern telecommunications systems. Construction of a communication network is related to the logical and physical structure of the comprehensive network, the choice of equipment placement points, method and scheme of construction of linear structures, the study of the need for communication services, forecasting and selection of demand for them. is a complex function. The solution to each of these sub-tasks is reflected in the characteristics of the designed communication network. The purpose of the network as a technical system is to perform work on the delivery of traffic in the provision of communication services. The quality of service is the main characteristic of this system. An increase in the number of resources (number of channels, bandwidth, performance) provides an increase in quality, but increases the cost of the network, so the solution of these small tasks is the amount of resources and quality of service. Modern communication networks provide a variety of services that can be performed using packet switching technology. One of the most pressing issues is that each of the services has clear requirements for the quality of service produced by traffic users.

Big data is a very large amount of non-homogeneous and fast-falling digital data that cannot be processed by conventional methods and applications. In some cases, along with the concept of big data, it is also understood to process that data. Basically, the object of analysis is called big data. The term big data was born in 2008. Clifford Lynch, editor of the journal Nature, used the term big data in a special issue dedicated to the very rapid growth of global data. But big data has been there before. According to experts, streams that receive more than 100 GB of data per day are called big data. Analyzing big data helps to identify patterns that are beyond the reach of human perception. This will allow us to further improve all areas of our daily lives, government, medicine, telecommunications, finance, transport, manufacturing and others, to increase their

capabilities, to find alternative solutions to problems. The growing popularity of Big Data systems has led to major changes in DBMS technologies - with the constant development of mature relational databases, a new class of NoSQL systems has emerged.

The relational model forces a rigid scheme that limits data variation and creates difficulties in horizontal scaling, so simpler models are used in NoSQL: records are generally formed without a scheme, which allows the model to develop dynamically and the horizontal scale segmentation (fragmentation and distribution) and duplication of data sets between nodes in large clusters.

Document databases such as MongoDB typically store sets of objects encoded using JSON or XML records. Documents are keyed and you can create secondary indexes or non-keyed fields. Document formats define themselves, and a collection can contain documents of different formats. Basic value databases such as Risk and Dynamo DB implement distributed hash tables. Records can be accessed primarily by searching for keys, and the value corresponding to each key is not considered a separate type and must be interpreted by the reading system. This uncomplicated model simplifies scaling and replication to create very large-scale, highly existing systems. The set can contain different number of column entries. Graphics foundations, such as Neo4j and Graph Base, organize data in the form of a structure with an internal structure - typically oriented graphics. Such databases are capable of providing very high performance for tasks related to graphical transitions and subgraphs search. Because graphics allocation is NP-rigid, such databases typically have a smaller scale and meet the requirements of ACID transactions for higher consistency. NoSQL technologies affect the architecture of applications in many ways - there is no analogue of the universal SQL language for relational systems, and each technology has its own unique query mechanism. As a rule, all of these mechanisms require the programmer to determine how the query is executed - there is no query scheduler that optimizes execution of the query in semi-automatic or automatic mode. It also depends on the programmer to combine the results of different data sets. The lack of join support forces the data model to be standardized on a large scale so that join requests can be executed more efficiently by accessing a single data set. When databases are fragmented and duplicated, the programmer must also ensure consistency in their simultaneous updates. You should also consider the possibility of data obsolescence due to delays in repeating updates.

Telecommunication shutdown network and network equipment structure Subscriber load concept Study of telephone network performance and performance quality, mathematical models Test questions on the studied topic Packet switching networks, packet switched networks structure traffic and services in data transmission networks are indicators of the performance of IP telephony data transmission networks. Study of data transmission traffic. Mathematical models Test questions on the topic studied are the assessment of the reliability of the communication network and reliability indicators, problems and methods of assessing the reliability.

## Conclusion

In conclusion, a number of promising projects for further development and modernization of telecommunications networks are being implemented in our country. As a result, the communication infrastructure is developing rapidly. Obsolete analog telephone exchanges up to the level of district centers of the republic have been replaced by modern, digital telephone exchanges, high-speed digital channels based on fiber-optic communication lines have been established, and work is underway to expand the network and further increase its reliability. The created infrastructure is the basis for the rapid development of wireless technologies, including mobile communications. This work will further strengthen the knowledge of the next generation and create more conveniences.

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