

# Application Discussion of Cloud Computing in Hospital Information Construction

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**Abstract:** With the high speed development of internet technology, cloud computing is also widely used in hospitals. The information resources and content storage in the cloud computing framework can provide software and hardware support to the hospital information construction. This article will discuss the cloud computing application in hospital information construction, and provide planning and implementation plan for the hospital information construction through analyzing the current condition of hospital information construction.

**Keywords** Cloud Computing, Hospital Information, Construction, Application

## INTRODUCTION

In the information age of rapid development of cloud computing, information construction can be carried out using cloud computing technology, such as registered medical treatment, drug information registration and medical emergency. At present, the development of hospital information construction in China still lag behind, and the information management in medical field needs to be improved. Therefore, we introduce cloud computing technology in the hospital information construction, which can make the management of medical software and hardware more humane. Moreover, it will make the corresponding medical treatment of the masses more convenient and quick.

## DESCRIPTION OF CONTENT ABOUT CLOUD COMPUTING TECHNOLOGY

Cloud computing technology is based on the computing platform of the internet information. It rouses out the evolution of grid computing. In the network environment, it plays the role of integrating redundant resources to maximize the use of resources. On the technology platform of cloud computing information, various network information can be distributed according to its own needs, or it can obtain the desired service according to the extension component. Cloud computing information technology can share some of the hardware and software resources, and different network interfaces have unified network protocol and access standard. Cloud computing technology can provide corresponding information search and data storage services for different users, and it can also provide reliable running platform for different applications. The biggest advantage of the cloud computing platform virtualization is the integration about the wide range of data resources and customer information, resource module adjustment according to the hospital needs

and the achievement of node resources and effective use of data. Therefore, the computing power of distributed cloud computing technology is very strong, and also has good flexibility and stability in node resource utilization. The application of cloud computing in hospital information construction can accelerate the integration and improvement of medical information in hospitals.

## ADVANTAGES OF CLOUD COMPUTING IN THE HOSPITAL INFORMATION CONSTRUCTION

### Low construction costs

Cloud computing relies on virtualization technology and multi-instruction parallel computing technology to perform computer system construction and resource allocation. Cloud computing technology can virtualize servers, memory, and hard disk storage and make the information combination of computer users more reasonable. In the process of hospital information construction, virtualization technology cannot be restricted by existing resources architecture. It can expand the construction standardized system of the hardware, so as to complete the allocation of information resources and function extension activities. Therefore, the information construction and management of the hospital can rely on the low hardware configuration for resource management, which can greatly reduce the construction cost of the system.

### Excellent performance

Cloud computing is based on Internet information technology, which is used to operate the services through creating virtual hardware resources to promote the rational distribution of application data. Multiple instruction algorithms in the cloud computing system can greatly improve the data computation speed. Moreover, the resource allocation and information storage in cloud computing are very flexible, which can be automatically allocated

according to the user's requirements and the performance is excellent.

#### **Sharing of medical information resources**

In the cloud computing system, we can build a virtual software operation environment, and the hardware facilities can be allocated according to the software, in order to achieve the resource sharing within the system. This kind of resource allocation mode that breaks the hardware limitation, greatly reduce the idle nodes in the system and increase the physical utilization rate of the whole system.

#### **Data storage security**

In the cloud computing system, there is a storage data management center that can store and manage the user's information. Even if the system is damaged due to external shock, Trojan virus, users can also view the saved information from a database server resources, it can effectively ensure the security of system data. Therefore, cloud computing has high data storage security in hospital information construction.

### **STATUS ANALYSIS OF HOSPITAL INFORMATION CONSTRUCTION IN CHINA**

With the development of medical reform in China, the hospital information construction has undergone a series of changes. At present, large hospitals in China have started to use hospital management information system and communication network management system for the medical information and service management. In recent years, intelligent information devices have also been used in various medical services. However, from the overall development of medical industry, the application of cloud computing technology in China's hospital information mainly focuses on the network of medical services. In the intelligent aspect of medical diagnosis and disease analysis, there are many loopholes and lack of service in information construction. In the hospital information construction, exist the following problems: first of all, different hospitals have different medical and hygienic standards, which makes data information sharing appear cognitive difference. The system software development has different network interface and the format of storage files in various hospitals, which also causes the difficulty of information transmission communication. In the second place, there are many medical services and different types of services in big hospitals. This makes the medical management information system more bulky. Moreover, in the construction of system websites and applications, the high rate of classification and crossover about different information and poor overall system function will make the wasting of resources. At last, there are different levels of economic development in different regions, and the development of hospital information construction is uneven. Therefore, different hospital information construction, also should adopt the

strategy of local conditions. In view of the overall development, the information level of Chinese hospitals is low, and there is still a large room for improvement in medical management and health services.

### **CLOUD COMPUTING APPLICATION IN HOSPITAL INFORMATION CONSTRUCTION**

#### **Cloud computing application in hospital online software services**

Hospital information construction need support of various service software. Most of the professional management software have high requirement on hardware equipment of the computers. This is the difficulty of software operation. Cloud computing can build virtual hardware resources through the construction of virtualization system. This virtual system has low requirement on computer hardware, and the hospital can install and manage the software according to its actual needs. The virtualization system can provide reasonable load node support according to the equipment needs of different software, thus ensuring maximum utilization of system resources. Moreover, the cloud computing system support many different medical software types. Hospital can only pay the required service, which will greatly reduce the cost of information construction.

#### **Cloud computing application in hospital management platform**

In the current hospital management platform include hospital service framework, outpatient medical treatment, resource sharing. Among them, the hospital service framework needs to arrange professional personnel to update the corresponding modules. The outpatient medical section includes hospitalization, registered medical treatment, drug registration, medical care and so on. This information requires the specialized establishment of data storage for cloud computing databases. For example, in the construction of hospital information management platform, large hospitals usually use storage hard disks of more than 100T for data storage. The distributed storage technology of cloud computing can effectively reduce the spatial appropriation of the virtual information, so that the storage array can manage the larger business data. The resource sharing of hospital information also requires uploading information to the cloud and then users can browse and download the medical resources. Application of cloud computing platform in the hospital management can effectively solve the problem of the hospital information island, integrate the whole medical resources and solve the storage and sharing of medical resources fundamentally.

### Cloud computing application in hospital multi-agency resource sharing

China is gradually covering the medical information network of provinces, cities and counties, which main purpose is to realize the resource sharing of multiple institutions in hospitals. The platform is set up by the provincial medical information department. Municipal and county-level hospitals shall provide corresponding medical resources. The construction of medical information network is realized through unified medical information access. The medical information network can upload the corresponding medical information to the national institutes of health, or send the regional medical information to the rural health service station in order to realize the interconnection of medical resources.

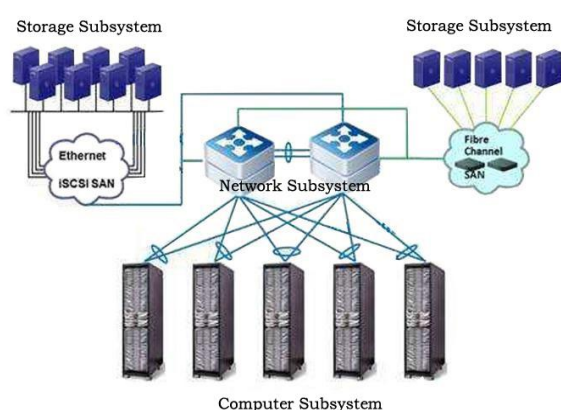


Figure 1. Multi-agency resource sharing in hospital of cloud computing application

### Cloud computing application in hospital data storage

Medical image information and text information grow rapidly in the hospital, which brings the data processing and storage difficult. Moreover, different image format and text information format of hospitals leads to the problem of network protocol in system storage. For different kinds of information transmission content, we can use cloud computing to construct the hospital information storage module. A large amount of data information can be managed through the cloud storage platform. Cloud storage relies on virtual servers. In the transmission and storage of data, it has the advantage of high transmission speed and large amount of transmission data. The data storage method of cloud storage can effectively reduce the problem of the same data stored in different data files, and it has high efficiency and stability in data storage. Different hospitals has different information of the image data. For small and medium-sized hospitals, the image information stored in the cloud platform may be only a few hundred GB. But images stored in some large hospitals can be as high as a few petabytes. For a huge amount of information storage, the cloud computing platform that runs independently of each database distribution node and integrate the stored

information in different databases. It will realize the storage and sharing of hospital information. In the database of cloud storage platform, it can increase the storage capacity in the database to meet the storage requirements of different medical information. Therefore, for the medical image information that is often used, the storage and management activities of hospital information can be completed through the cloud computing storage platform.

### Cloud computing application in hospital telemedicine

Hospital telemedicine requires the use of desktop virtualization technology. However, if desktop virtualization wants to achieve remote medical services, it will invest a lot of money and manpower in the development of virtual desktop, Web pages and applications. The effective combination of cloud computing and desktop virtualization can greatly save the construction cost of virtual data center, which will improve the integration and sharing efficiency of data information. Moreover, the combination of virtualized desktop and cloud computing data system can also realize the development of Web pages, application development activities and promote the mobile intelligence of hospital telemedicine. For example, in the diagnosis and treatment of remote diseases in hospitals, mobile smart device users can upload their own disease images and upload them to the cloud computing data platform. From the virtualized desktop, the doctor browses the image information that stored by the cloud computing data platform and then makes a targeted diagnosis and treatment based on the patient's condition. This kind of hospital telemedicine based on cloud computing data platform can facilitate the interaction between doctors and patients. It can improve the accuracy and treatment of disease diagnosis, and promote the effective utilization of medical resources.

### CONCLUSION

The application of cloud computing in hospital information construction has promoted the automation and intelligent development of medical industry. However, cloud computing technology still has some defects. At the same time, the limitation of network bandwidth cause a series of problems of hospital information construction. Therefore, in the case of hospital information construction, we should take the stable operation protection of the existing medical information system in the first place. Then, according to the relevant requirements of medical service, we can operate the introduction and development of cloud computing data storage system. Only the effective combination of cloud computing and hospital medical requirement can promote the long-term healthy development of hospital information construction.

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