Web Service Performance Analysis and Research of Distributed LAMP Architecture

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Abstract. There are many websites on the Internet in the early stage of development, its Web service performance is not strong enough, resulting in the failure to run the system and finally the system crash. Based on this situation, in order to ensure the accurate and efficient service of the Internet website, it is necessary to analyze and study the service performance of the Web. Distributed LAMP architecture studies and analyzes the performance of Web services, which can accurately discover the performance defects and problems of Web, and research a more appropriate configuration of service performance, and the final results presented are more accurate and effective. With the deepening development of the Internet application, the website has become a key window for many people's information sources. Through the Internet website, we can not only understand the world more comprehensively, but also learn more knowledge. Therefore, building Web services with better performance is something we should consider. In this paper, the performance of the Web server was optimized and improved through the analysis and research of the load of the Web server, and the tuning test was carried out through distributed LAMP architecture by observing the Web service's access to users, data information maintenance and monitoring, etc.

Keywords: Distributed, Web Services, Lamp Architecture

1. Introduction
LAMP is a Web network application system and development environment, each letter of which represents a component, which each component is typical and representative. LAMP architecture is a popular Web construction framework on the Internet nowadays. Each component of LAMP has representativeness and advantages, so it is the first choice for Web sites. Due to the different components selected during the construction of LAMP architecture and the different assembly sequence of each component, the construction process will be relatively complicated and tedious. But because of the typicality of these components, we can easily get them and use them for architecture [1]. With the continuous development and improvement of LAMP, the compatibility of these components is also constantly improved and strengthened. It has changed the creation of some additional functions on the Web page, enhanced the collaboration ability between different
components and facilitated its comprehensive application. These different components together form a Web application platform with comprehensive performance.

2. The web service

Web services are an interactive application for distribution that can use open standard common language standards to describe the discovery, collaboration and composition of components. Web services can enable components running on different Web servers to exchange data information and distributed implementation directly with each other. The implementation of the Web services specification is more convenient and quick. Data and information can be exchanged directly without signing agreements between different applications. Web services are capable of performing specific business functions and can be easily distributed for improvement. It reduces the cost of application interface, provides greater convenience and benefits for network users, which is also one of the reasons for users to use Web server. Web services provide a common mechanism for distributing the entire Web site access process on the Internet. A Web service must be able to merge content from multiple sources, content in a traditional environment, and content at the network level [2-3]. The process of Web server storage is in the distributed processing, the relevant information stored to the local. Web services can handle large amounts of data, so it needs to implement techniques such as load balancing and caching mechanism to keep the scalability of the Web server. Web services do not require the user to use a fixed corresponding system; the user is free to use a variety of device platforms, browser types, or system types.

Web services are becoming a necessary technology for distributed applications. Nowadays Web service has become a convenient technology to serve the distributed application of numerous Web pages. Although Web service performance optimization has made great progress, there are still many problems. With the continuous expansion of the number of network users, the performance of Web services must be improved constantly. It is not enough to maintain the stable operation of the website only by increasing the number of servers. So we need to use the LAMP architecture to improve the Web. Of course, at the same time of improvement, we should also think more and have more ideas about the function of the website, which makes us more convenient and fast to meet the needs of users. Of course, this also leads to the network system in the continuous development and testing process, the server load increased resulting in the web page can not run. For these problems, we can continue to summarize and reflect, construct a more perfect service system, strive to optimize the content of the web page, continuous testing and inspection, with more advanced technology to solve these problems [4-5]. Web services have many characteristics, such as distribution, practicability, timeliness, etc., but if the performance of the Web is not timely research and analysis and improvement, it will make the number of network space on the Internet, such as web pages, grow rapidly. If this goes on for a long time, some Web pages will be overloaded and become slow to respond, and finally the system crashes.

With the continuous development of Internet and information technology, more and more come Internet applications, network users can access the web pages and resources increasingly diversified architecture, increased amount of information, have to face many web page system aiming at the problem of efficient and fast data information management, the information data to be Shared to ensure the data confidentiality and protection, which requires the web server system must be able to monitor and protection of the comprehensive ability of management and control. Part of the traditional Web server does not have the concept of data protection, its effectiveness and versatility is not strong, in today's information explosion era, this traditional Web server system is more and more difficult to survive. Therefore, it is necessary to transform Web services. Nowadays, most Web servers are implemented based on distributed LAMP architecture, and various components under this architecture are becoming increasingly necessary parts. The architecture of Web service is based on the interaction between three kinds of structures [6]. It is a kind of service-oriented architecture. A service provider is an entity accessible through a network address that accepts and executes requests from a network user. And issue commands to the Web Services Center to enable users to access the service. In this framework, Web service system adopts distributed architecture: data presentation layer, system service
layer and data service layer. (As shown in Figure 1)

1. Data presentation layer
   The data presentation layer mainly displays all kinds of data information, information query and the performance of analysis results.

2. System service layer
   The system service layer is the most important part of the whole Web service system, which is composed of several service modules such as the Web server that receives the data request from the client. The Web server receives the data request sent by the client, decomposes the access request content of the network client into several query conditions, and requests the corresponding data information to the Web data service component module.

3. Data service layer
   The data service layer is responsible for providing relevant data information services required by the system service layer, which is mainly composed of distributed data structure modules. In the distributed environment, the data provided by the data information includes the data content stored in the form of database and document [7]. These data contents must be stored in the Web data service module to realize the data and information fusion between the Web service system and the client. In the data services layer, the data in the database needs to be transformed into documents, and the corresponding data in the database needs to be modified according to the changes.

   The Web server should pay attention to its basic performance while realizing the cache and use of data information. It should start from the practicability, beauty and management of the website. Provide basic user feedback function, and has a good appearance, can achieve graphics, audio, video information integration, can easily jump in a number of web pages.

![Figure 1. Web service architecture system](image)

### 3. Distributed Web server architecture

Distributed Web Server Architecture Distributed system architecture is based on the network system composed of multiple interconnected components, these information resources can cooperate, reducing the over-centralized server architecture pattern [8]. Distributed Web server architecture has the following characteristics:

1. These components can be adjacent or scattered, and finally connected and fused through the Web server.
2. The distributed system architecture consists of an ordered whole, which should be transparent and open to users.
3. The implementation of a Web service can be distributed to run on multiple constituent components.

   Compared with the centralized Web service system, the distributed system is more dispersed, the cost is not high, and it is more favorable and has a higher cost performance. Because of its network distribution, it has a faster average response time, and the distributed system architecture also supports Internet applications that work together. Moreover, due to its changeable distribution, it also has certain reliability and extensibility, which makes the architecture of Web services more changeable.
and complete [9]. In the process of structural change, the number of users is increasing, and the response speed of its Web server is getting slower and slower. Therefore, we should increase the page cache, and consider using the caching mechanism to reduce the load pressure of data information reading and protection monitoring. By using the caching mechanism, the overall system speed of the Web server is increased and the load of the Web server is reduced, but for some static access and detection, we should consider using the fragment caching mechanism. In the process of access to information, the lack of data storage, update the speed of web service system and slower, so we should begin to consider whether these data can be information for simple cache, then the distribution to the local data cache memory, so that the web server running speed, and reduce the pressure of system load. By using distributed caching technology, the architecture of Web service system can be improved and reformed continuously. As the number of system visits increases again, the load on the Web server will increase, so it should be distributed to solve the problem. Reasonable distribution of Web server workload to achieve load balance. Maintain synchronous update of data and information, timely write to memory, through cache synchronization or distributed cache to facilitate multiple calls by the Web server system. (As shown in Figure 2)

The connection between distributed Web services and network users is decentralized. The user issues an access request to the Web service, the Web server returns the response result to the user, and then the connection has been completed once, and the connection between the Web and the user will be disconnected [10]. Using this approach can avoid the complexity and complexity of monitoring management issues. And the distributed Web service can expand the user interface, convenient and fast, and will not affect the user's access after storing new data information. Web services do not support observing user status information, which makes it convenient for many users.

![Cache synchronization, system load, Static access and detection, access request](image)

**Figure 2.** Implementation of web service architecture

4. Conclusion

To sum up, with the continuous development of Internet technology, Web service has increasingly become the mainstream mode in the network environment. Distributed LAMP architecture not only brings convenience and good interactivity to Web services, but also affects the performance of Web services to some extent. The performance of Web services becomes one of the key factors to determine whether they can be further used more widely. The construction of Web services with high service performance requires reasonable utilization of LAMP architecture. In this paper, the performance of the Web server was optimized and improved through the analysis and research of the load of the Web server, which the tuning test was carried out through distributed LAMP architecture by observing the Web service's access to users, data information maintenance and monitoring, etc.

Acknowledgments

Web Front-end Development and Research Center of Yunnan Open University.

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