

# Discussion on Performance Test Technology and Application of Computer Application System

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## Abstract

In recent years, with the rapid development of science and technology and the continuous improvement of economy, many scientific research products lead the trend of the times. Among them, computer science and technology, based on the traditional media, grasp the opportunity of replacing the old with the new, combine the old and new functions, bid farewell to the traditional computer, which has slow timeliness, poor communication power, and become a development trend with technologies with strong penetration and appeal, novel forms and novel contents. They seek advantages and avoid disadvantages, and learn from each other. There are complex structures in the computer application system, such as database, Internet and server. For system R & D and technical maintenance personnel, in order to deeply understand the bottleneck of computer system operation and achieve the ultimate goal of improving the overall system performance index, it is necessary to strengthen the system performance test.

## Keywords

Computer; Performance; Application System; Testing Technology; Application.

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## 1. Introduction

Nowadays, some enterprises have realized the necessity of computer application system performance under the background of big data. Through a series of new forms of information management and diversified testing technologies, they make the computer application system performance testing technology more life-saving and trendy, and use the new method of integrating information and new testing methods. At the same time, we should make full use of the professional performance testing technology of the overall computer application system, comprehensively test the performance of the whole computer system, and find out the core reasons for the significant decline of the performance of the internal system of the computer, so as to effectively solve and improve the relevant performance of the computer application program and ensure the good operation of the whole computer system.

## 2. Overview of Computer Network and Application System Performance Testing Technology

### 2.1 Concept of Computer Network and Performance

Computer network is a whole complex network system composed of mutual understanding and independent computer systems. Among them, autonomy means that these computers can work independently without relying on the network. Interconnection refers to the multiple communication channels between Internet nodes, which covers not only the physical sharing and interconnection realized by the transmission medium, but also the logical interconnection achieved by the protocol. The relevant technical data for evaluating the main characteristics of computer network include: speed, delay, throughput, broadband and efficiency. In addition to the above performance indicators, people also pay more attention to the characteristics of computer networks, such as security and fault



The determination of the system can also help the monitoring of the operation process. Through GDB automatic debugging technology, you can: open the target program according to the user-defined conditions; Termination of commissioning tools at appropriate locations; When the program terminates, it can also detect the actual safe working environment of the target program in the computer application system; Or change the relevant running environment of the internal system program of the computer through the actual dynamic situation of the computer. In addition, GDB technology can also test the overall stability of the internal software of the computer through a series of potential safety fault mechanisms of internal debugging of the computer, as shown in Figure 1.

As can be seen from Figure 1: (1) represents the process of establishing the target program; (2) Established representative of the core process; (3) Represents the traceability of the target process; (4) Represents that the target process has been run.

### **3.2 Cross Test between RSP Communication Protocol Implementation Programs**

RSP access platform can establish high-level confidentiality agreement for the communication between GDB debugger and remote target program. If the GDB debugging is completed and the RSP access platform can be carried out, the relevant debugging technology can be connected to the target host for cross testing between programs. When the receiver gets the complete RSP interface platform message, it only needs to return "-" or "+", indicating that the message after passing or failing the security test has been returned to normal acceptance.

## **4. Computer Application System Performance Test**

### **4.1 Project Description**

Nowadays, with the rapid development of domestic scientific and technological strength, scientific and technological construction continues to develop in all walks of life. All kinds of computer science and technology have also started automatic management to provide convenience for all walks of life. If you want to develop better, increase the investment in economic, human and other resources, promote the rapid development of this technology, and bring more convenience to people's future life.

The computer or application system used by a company has a problem of poor operation. In order to improve the normal working state of the system, it is necessary to detect the characteristics of the system. The computer control system used by most companies is generally a three-tier architecture. It includes a public data server and four functional modules. Each module has an independent application server, which involves many user operating systems and applications. At the same time, when a large number of applications log on the platform together, the http-503 service in the system will hinder its normal operation, and there will be a series of abnormal performances such as automatic jump of web pages. Therefore, it is urgent to detect and judge the actual disadvantages through the performance of computer application system.

### **4.2 Computer Performance Structure Model**

#### **4.2.1 Relevant Indexes of Computer System Performance**

① Actual utilization rate of resources. It is reflected from the proportion between the actual use of network resources and the total amount of available network resources. ② Number of concurrent users. That is, the actual access ability of the internal system of the network can be displayed indirectly or directly through the internal login platform of the computer and the actual number of users who complete relevant business operations at the same time. ③ Actual network throughput. That is, under the condition that there is no fault in the network, the total amount of data used per unit time can reflect the ability of network equipment.

#### **4.2.2 Factors Affecting Computer System Performance**

No matter for ordinary users or relevant technical maintenance personnel who use the computer, when the computer is used for a period of time, the relevant performance of the internal application system

of the computer will be consumed and reduced to varying degrees. These conditional factors are not only inseparable from self consumption, but also normal.

#### 4.2.3 Computer System Test Process

During the actual test of the computer system, according to the actual needs of some enterprise management, only two modules a and B of the whole system inside the computer are tested. First, the actual concurrency management capability of module a and module B needs to be determined. According to the actual business conditions of module a and module B, you need to check the management function of the whole business process by viewing template a, uploading and downloading attachments. According to the actual application requirements, the average daily response time shall not be greater than 18S, the average daily online personnel shall not be greater than 390, and the maximum shall not be greater than 480, and the CPU utilization rate of the server shall not exceed 70%. In the test stage, if any parameter fails, the test will be terminated immediately. In the detection implementation process, we must first implement single event detection, and then implement mixed scene detection. The initial value is 50 users, then increased to 100, and then increased by 100 every day until it exceeds the upper limit of 500 users.

#### 4.2.4 Computer System Test Results

According to the analysis of relevant test results, there is no corresponding system bottleneck in a single transaction test. In the final result of the mixed scenario test, the special operation with the longest test response time is actually the same. With the increasing number of computer users, the response time also increases gradually. In terms of CPU utilization, the average overall CPU utilization of the server increases with the increase of the number of users, with an average of 42.1% from the beginning. When the number of users reaches 500, it will increase to 69.2% and no more than 69%. When compiling relevant reports according to the system performance prediction requirements of the computer, we must first clearly give the test objectives, categories and relevant indicators for the user, and then give the test conclusions, analyze the differences between them, and give more specific test results for the user.

## 5. Conclusion

In general, with the continuous development of the computer field in the new era, people can know the world without leaving home and search for information in various fields through computers. Therefore, we must determine all direct or indirect influencing factors through the unique characteristic structure model of the computer internal system, and test the characteristic structure of the computer internal system through the scientific use of the professional characteristic detection technology inside the computer system, so as to find the operation bottleneck of the computer system at the first time, so as to make up for the disadvantages of the system efficiently.

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