The Web database application system optimization research

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***Abstract*- The popularization of high today, all kinds of web application system continuously in the formation, development, grow to a certain degree of stretch out two problems: optimization and data mining. Increase users, data explosion have been exposed various problems, increase customer experience to improve the core competitiveness, so, in this paper, the Web database application system optimization is studied.**

***Key words*- Data optimization; The web application system; The algorithm; Design patterns**

The Internet increases the interpersonal communication, all kinds of Internet system arises at the historic moment, highly developed after there will be a larger population, will bring a lot of data storage and computing. Since such high rapid action how to make the system work, become an important research subject of one of the categories. In the software platform is almost not perfect system, only constantly for application requirements is king, software is different in different stages of demand to support and can't be eliminated need not optimized. System at the start of formal use after period of time, all aspects of the comprehensive performance began to wane, corresponding to the problem will not be exposed, optimization of the patch will appear constantly, have more constantly upgraded version of the application system to optimize the core part. Web database application system, mostly in the face of the vast number of wan large groups of customers, LAN or a large amount of data the customer, the system optimization is critical.

Web system is a set of customer-facing web pages, database of data calculation and analysis of the background and store the data of b/s architecture system, so the optimization of the system is also needed from the three aspects to do. Some of the other hardware configuration of the increase can also increase the performance of the system. So in this paper, the research developed from the following points.

Ⅰ.THE OPTIMIZATION OF THE SERVER ITSELF.

Most of Web database application system need to store a lot of storage space, and fast operation of the server hardware. The following is the practice of a small simple Web database application system architecture diagram

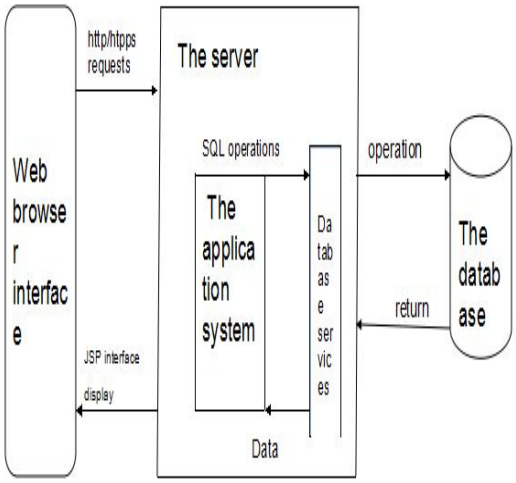

Figure 1. The Web database application system structure diagram

Can be seen from the above Web database application system of the main operation or the server side, so on server performance requirements or not little hush. And do this kind of b/s system by use of computer language is mostly object-oriented languages, the requirement for hardware or need to be aware of. Day class product month data will occupy a lot of disk space, failed to timely recovery system of garbage can make servers are getting slower and slower, restart the system, of course, also can reduce some of the rubbish improve the running speed, the system efficiency is improved, but on a system restart to maintain is very sad. So in the case of conditional, the configuration of the add server itself can improve system performance. Server optimization mainly starts with the memory, hard disk and CPU, increase storage can increase the data storage, memory, more can improve the computation, the CPU can improve computing, in which the three complement each other in the common progress is needed to improve the efficiency of team cooperation so as to achieve optimization purpose.

Ⅱ.THE WEB APPLICATION SYSTEM OPTIMIZATION.

In ascension of server hardware at the same time also need to increase the efficiency of the program itself, only by improving hardware configuration to improve performance is also not desirable, and in some cases hardware is helpless, the system is not optimized for? Isn't. We can still from their system to

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optimize, and represents a significant proportion of this part of the optimization is. Then system optimization will begin from the following two studies.

A.Background process optimization

Background optimization is also very important, the background is mainly responsible for dealing with the logic of the whole system, support the completion of the front desk business needs. The optimization framework is less, framework, once after set up good don't change easily, can change is the framework of configuration and code of certain framework or order, so as long as it's not conditions permit and deadly problem wouldn't optimization framework. Attention should be paid to release the good memory in the program, although in object-oriented languages such as Java, c # has recycling wit, but at the same time, this also is a weakness, the release of the core code block garbage can not be effectively, because recycling wit is need object will be abandoned in the release, think of an object has always been something left to add, also need not in front, with the content of the new added, so memory will account for more more, so you need to manually clear object and call the recycling wit.

Using timing task, a lot of data is not immediately processing. But the amount is larger, so the business logic of the put in less time end user access system, such as 2 o 'clock in the morning. Best when using algorithms to group the following code, see what can be optimized further, after complete test algorithm, and the best efficiency is the use of tools, if not, the unit test is necessary. As shown in figure 2:

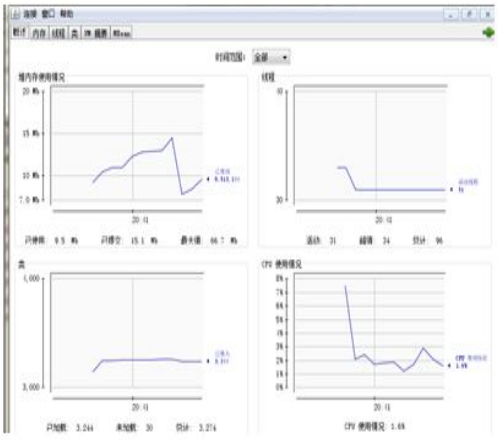

Figure 2: Data processing demonstration screen shots

Also need to pay attention to when using a thread, to prevent concurrent, lock and so on a series of problems. Of course at the time of use is also a need to manually release thread, in Java has built-in tools to test the JDK, if not timely release, will occupy memory or database link number, lead to system cannot directly produce new links. So as to cause the program crash, so after using threads manually set the best.

B.The front desk page and service optimization of container

If the background to try to increase the system throughput, the page is to reduce the burden. But page is loaded, the less is the faster (same speed), so page as far as possible the use of third party plug-ins, picture is too high, also it is not necessary to put the pixels in the clear off all useless alert after the completion of debugging and print some debugging information. Reduce the number of pages load can improve the page loading speed, so as to achieve optimal results.

When selecting a service container, may not be suitable for the late development of system, so the back is the need to optimize. If you choose a tomcat, and in the later choose to use if possible cluster, this can increase the concurrency value, allowing more users visit colleagues. If you use a proxy server to pay attention to the reverse proxy balance.

C.Database optimization and SQL optimization

Database in a Web database application system is an essential part of, so database optimization is also very important. First of all to control concurrent access to the database, it is better to optimize database connection pooling use reasonable configuration. Less as far as possible when later in the optimization of dynamic data table design, but you can add more indexes, stored procedures, and shall be regarded as to make up for the defect of the design. In this paper, the optimized database to oracle database as an example, the research is aimed at behind the oracle database to illustrate. Generally speaking, in the case of the system hardware support, system global area bigger benefit the operation of the database efficiently. More buffer cache can be cached data block, so that we can improve the cache hit ratio, save the physical disk read high price; Big Shared pool means that the library cache.

Library cache is larger, can save the SQL syntax analysis more information; In addition, some objects in the database, such as tables, indexes, procedures, triggers, package and so on also after performing for the first time into the library cache. Large library cache can guarantee the high percentage of these objects, thereby saving analytic and load the price. As a general optimization principle, when we solve this problem, increase the capacity of SGA, and appropriate to ensure the oracle instance can run more efficiently. Set the buffer cache has a capacity of 32 M, set the size of the Shared pool to 56 M. Run RPT_lib. SQL program check the library cache rate (haven't run the script), suggests that the library cache enough.

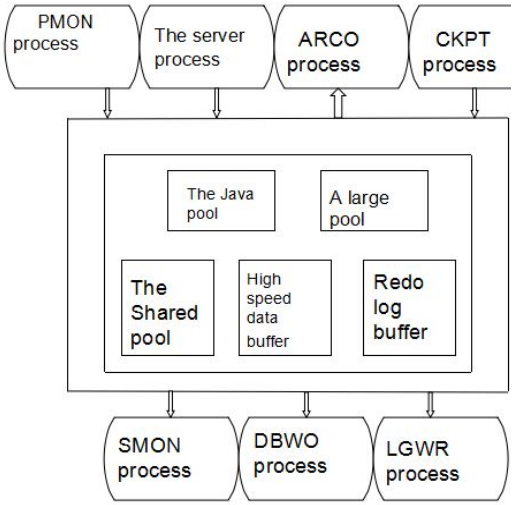

Figure 3. Web system structure

In figure 3, the PMON process responsible for cleaning has failed user database connection; SQL and PL/SQL server process by processing requests, on behalf of the user and SGA interact; ARCO process responsible for in each redo log switch copies the contents of the online redo logs to archive the target; CKPT process is responsible for the checkpoint in a database with the current system change number of data files and control the head; The Java pool is used to buffer the Java code; Large pool used to buffer and the I/O slave process I/O operations related to the RMAN; The Shared pool to have recently been access to SQL and PL/SQL statement cache memory; Data cache for recently accessed data, index and the fallback buffer cache storage; The redo log buffer record for recovery purposes; the result of the database changes SMON process used to perform instance recovery, splicing free space and management interim period; DBWO process responsible for from the Database Buffer Cache Buffer to Database data files; The LGWR process is responsible for the Redo Log Buffer to write program to the online Redo logs.

Oracle optimize the environment of general order is as follows: adjusting (server, network, disk), oracle instance adjustment adjustment, oracle, SQL, oracle object. Our test using oracle data table capacity of 50 M, record the number is 500000. Test method is: according to the requirements of the user query to calculate the user needs to browse the data records of start-stop position, and then in the SQL statement to join the location and executing SQL statements, query the data table, get the user want to browse the record collection. Make use of the SQL statement is as follows:

SELECT NAME，SEX，ID FROM（SELECT * FROM（SELECT * FROM BIG） WHERE ROWNUM ＜ TOPOS ORDER BYROWNUM DESC）WHERE ROWNUM < TOPOSFROMPOS + 1；

Use the SQL query result set need 5 ~ 6 s, the speed of response is difficult to meet user requirements, so must be optimized to improve the response speed. We are on the assumption that the environment under the conditions of the adjustment has been completed by oracle9i instance, object, the adjustment of the SQL query your conclusions, which focus on adjusting to the SQL statement. At the time of query also notice some details, such as the query to use less as far as possible even name "*" whole put together also want to spell, and the order of the oracle from down to up, put back with filterable, use less as far as possible in the SQL.

Ⅳ.OTHER ASPECTS OF THE OPTIMIZATION

Web database application system can be optimized, in addition to the characteristics of the study, and some other points can be optimized:

Disk I/O optimization: database data changes, the file operations such as every change will drive the change of some type of I/O, may be a memory, such as physical disk IO operations platform has an important influence on the whole system. If IO execution efficiency high enough will affect the performance of the system. In necessary I/o activity, to optimize the operation process, improve the execution speed.

Optimization of the operating system, operating system, application system running environment, directly affect the execution speed of the platform and performance, while the effects are easy to solve but also the most direct, the influence of the system performance is not good enough to run special slow, more powerful servers again fierce program also useless, so often optimization operation system is necessary.

Network optimization: network directly affects the system access speed, good is usually a link in the network environment is also very important.

Ⅵ. SUMMARY

In this paper, the study of Web database application system optimization, mainly from, hardware configuration, system and database to do a major research, this paper also from the disk I/O, the operating system and network environment, etc, to do a simple optimization of necessity. Thus this paper expounds the necessity of optimization and some methods. For optimal direction, optimization need to find the correct diagnosis of real impact performance, so as to implement the reasonable optimization operation, make the Web database application system performance is better.

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