CSCanada
Management Science and Engineering
Vol. 5, No. 3, 2011, pp. 175-179
DOI:10.3968/j.mse.1913035X20110503.062

ISSN 1913-0341[Print]
ISSN 1913-035X[Online]
www.cscanada.net
www.cscanada.org

The Study and Development of Transaction Subsystem of Data Center

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Received 18 June 2011; accepted 26 July 2011

Abstract
Along with the rapid growth of the enterprise network services, the data center and its management system has been challenged to fulfill new requirements, which mainly deal with the rivalry between management and maintenance, including the server, though in a deluge of number, fails to reach the standard of business requirement of the busy time; low average utilization rate of the sever result in the increase of both sever quantity and management cost and the pressure imposed by their attendant onerous enterprise management and cost. Therefore, based on the prerequisite of the stable operation of the system, to improve the enterprise value by employing management system with higher efficiency and controlling data center is the wave of the future. This paper synthetically accounts for transaction system of data center's status quo and problems. It analyzed and studied the transaction system of the deserved functions and systematic components date center, and a design of transaction system of data center of the education metropolitan area network was based on the study above.

Key words: IDC; Information System; Day-to-day Transaction; File Management

ZHANG Wenbi, WU Hantian, LI Ruotong, & MIN Guanghui(2011). The Study and Development of Transaction Subsystem of Data Center. *Management Science and Engineering, 5*(3), 175-179. Available from: URL: http://www.cscanada.net/index.php/mse/article/view/j.mse.1913035X20110503.062

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1. FOREWORD
The development of informationization attracts ongoing globe attention with its swift and violent development and extensive influence. The development of informationization attracts continuous and global attention with its swift development and extensive influence. As the transfer station on the procedure of information processing, the practical significance of data center is unable to be ignore. Along with the deeper employment of applications, the management of traditional data center is hard to satisfy the operation of intricate and daily affairs so that the new model of management is extremely imminent and the design of NGDC which employs management and information system into daily management of data center is already expected by the public.

1.1 The Background and Purpose of the Research
The continuous development of transaction of data center results in data center and its management requirements to be improved step by step. Excepting for operating costs, such as firmware maintenance fees, electricity cost, there are problems of management and maintenance such as: server, though in a deluge of number, fails to reach the standard of business requirement of the busy time; low average utilization rate of the sever result in the increase of both sever quantity and management cost and the pressure imposed by their attendant onerous enterprise management and cost. Therefore, based on the prerequisite of the stable operation of the system, to improve the enterprise value by employing management system with higher efficiency and controlling data center is the wave of the future. In the same way, the education industry's dependence on transaction of data center, bespeaking the

construction of education metropolitan area network's data center management system is of great significance of the era.

The purpose of this research is based on the comprehensive optimization of management of data center, deleting and merging the redundant, inefficient part of traditional management system. We incorporate the next-generation data center concept into the traditional data center, in order to build a low-cost, highly efficient next-generation data center, which is called management information systems.

1.2 The Function of Management Operating System and System Configuration

The affairs of a functioning management information system in general functions include: management services, information processing, transaction processing, statistics, decision support and implementation support.

Management services, including electronic forms, electronic document management and graphic image processing functions.

Information processing functions include: data center data query, statistical various types of equipment, overtime statistics, staff attendance, and so on.

Personnel management is a part of data center management, which includes personnel information specific statistics, mobility management, personnel management and personnel evaluation management, rewards and punishments.

1.3 Associated Development Tools and Technology

The system chiefly uses PHP to develop, MySQL for data storage, and system loading is by virtue of Apache2.2 sever.

PHP is known as a kind of script language run and saved on the server with low resource consumption, which is run on the sever, and then send to the client. Besides, PHP has a competent knowledge of analysis XML, as for editing, has access to any kinds of text editor, equipped with functions relate to fileand image processing and catalog operation, in support of nearly entire database and heaps of communication protocols.

PHP cooperate with MySQL so tacit understanding, PHP defined a set of MySQL functions which all can support MySQL programming. MySQL is a robust database server with free open source, high speed, multi-thread, multiuser andcross platform, it not only in support of key task loading production system, but also stand for large database storage, what's more, it can also be embedded into other software. MySQL provide a versatile and practical function set, due to its connectivity, speed and security, MySQL can access to Internet database conveniently. Moreover, MySQL memory allocation system is based on thread and swift without hole, thus stability isensured.

The server's success in the performance of open source code, an open development team, back up cross platform application, thus stability is ensured.

1.4 Technical Route

In the process of system design and implementation, it firstly utilizes field investigation to gather information about demanding, after that analyzes and researches every function module and database structure of the transaction system of data center. Via a integrating of user needs analysis and research, getting full knowledge of the advantages and disadvantages of the system, the function modules and database structure of the system has been improved , corresponding module has been reset and innovated, implemented module by encoding, finally carried out the system (Specific technical route refer to Figure 1).

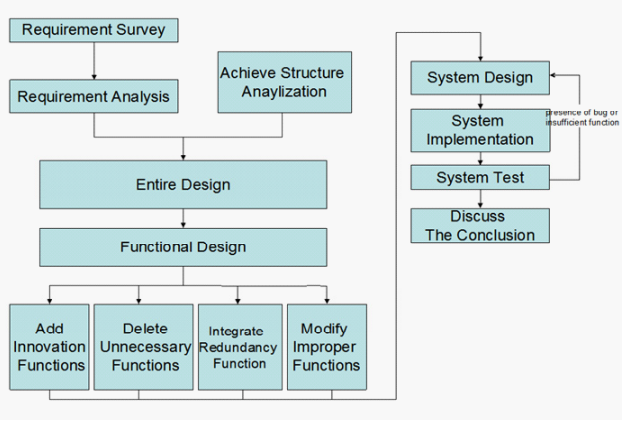

Figure 1
The Technical Route Chart

2. SYSTEM ANALYSIS AND SYSTEM OVERALL DESIGN

2.1 Data Flow

Specific data flow of the system as shown in Figure 2:

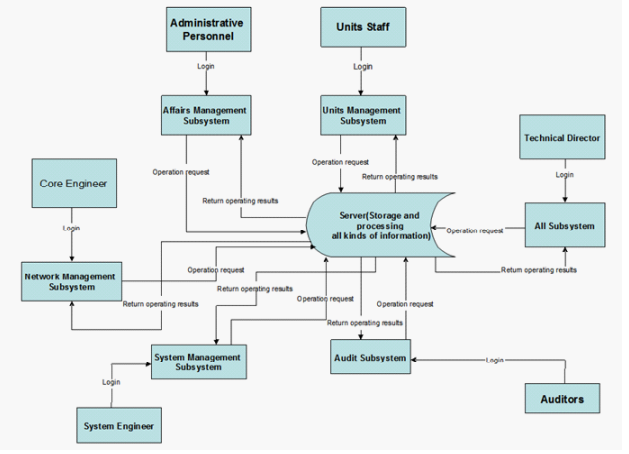

Figure 2
Whole System Data Flow Chart

2.2 System Architecture

The system is on the basisof technologyof B/S pattern development. Contrasted with traditional MIS system, its additional advantages are that online query, updating data dynamic, remote maintenance database,as shown in Figure 3:

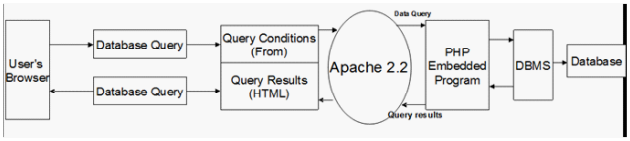

Figure 3
Structure of the System

This system is able to receiving user requests through running user interface that is provided in the client browser and pass the user request to the Web server, and meanwhile receiving returned page data transfer from the Web server to client; Web server is responsible for receiving request transferred from user interface of client browser, conversing it into SQL statement that can be identified by database, and be send to database server. Web server will transfer the outcome to static HTML code which is capable of identifying by browser and then send the outcome back to client browser when database server executed SQL statements and send the executing results return to the Web server.

In addition, the maintenance and upgrades of B/S structure system are just employed on the server exclusively, so that client has quick and convenient access to recently updated system without involvement, which is just fall into the distinctive trait of "thin client".

2.3 Authority Diagram of System

The roles of the use of the system are divided into technical directors, core / aggregation layer engineers, administrators, auditors and so on.Different roles have different permissions, so that when entering your user name and password, and after a certification system where the subsystems into their own authority, one can do operations, handle daily affairs, the exercise of power cannot leapfrog in their own purviews.For the illegal users the system will directly force them out, to ensure the data security of data center, as shown in Figure 4:

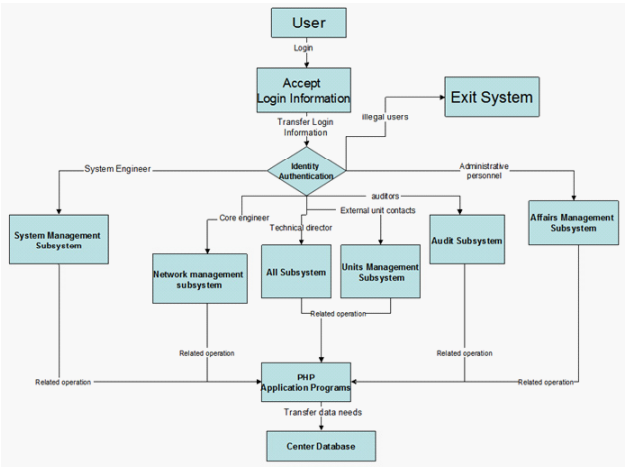

Figure 4
Flow Chart of System

3. SYSTEM DETAILED DESIGN

3.1 System Entire Functional Module Design

Data center management information system is divided into five subsystems: transaction management, system management, outsourcing the management, audit and network management.The specific function is assigned as follows (see Figure 5).

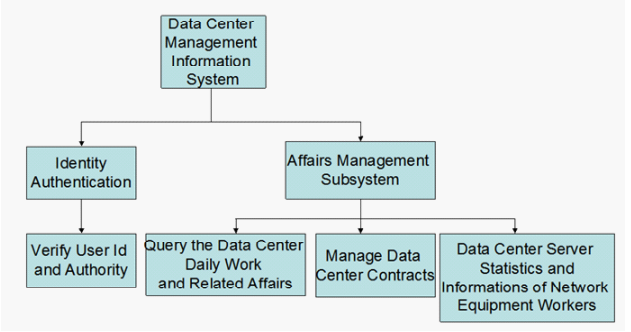

Figure 5
Functional Structure of the System

After the division of function modules, the design of function modules of the system has been finished. Function modules of the system will not iterate with the system development,but enter to the database design stage directly. This discussion will switch from the overall design into the transaction management subsystem design and implementation.

3.2 Database Design

Next, the design of conceptual structure abstracts the user needs and other information into the information structure, that is, the conceptual model.ER model is one of the most famous and most practical conceptual models. The E-R diagram of access units of system and IP address management is shown in Figure 6:

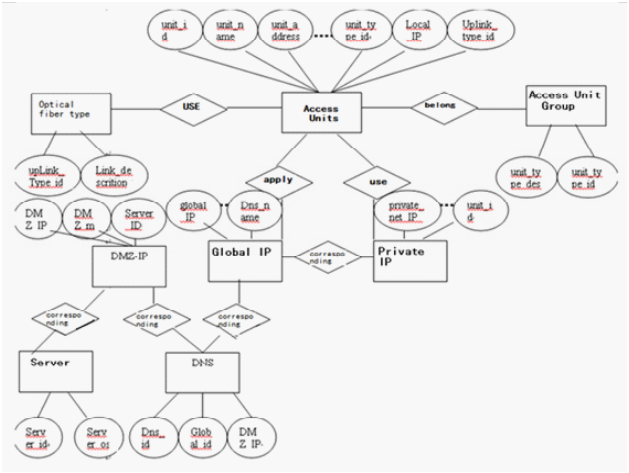

Figure 6
E-R Chart

4. System Implementation

4.1 Implement of Function Concerning Database

As a B/S structure of the transaction system, design and operation of the database is inevitable. In the design and implementation of database, MySQL and other database tools such as SQLServer share little variance for they all taking advantage of the standard SQL, so that basing on the demanding to establish a homologous library and table will be ok, there is no need to tautology.

During the duration of PHP programming, each function module has the operation of the database, which is used rather frequently. PHP possesses a set of MySQL functions and they all can support MySQL programming, taking database link function mysql_connect() for example, three groundparameters of this function arehost name, username and password. The function can't berecognized in the lower version of Zend. When I was connecting the database, this problem arisen, which is although database was connected and can operate on it, Zend always report error when debugging, hence the use of latest development environment in development programming should be taken into consideration. Concrete code to connect database is $dbc = mysql_connect(DB_HOST,DB_USER,DB_PASSWORD)OR die('Could not connect to MySQL:'.mysql_error()), among which the die () function serves as feedback of the default information when fail to connect database.$dbcis avariable of storage link database information to handy for later call.

Every MySQL operation to fixed order use of database selection function mysql_select_db () as well as some results processing function, though give thought to reusability, encapsulation is preferred, seeing that simplicity and code readability of process oriented, select and put process oriented development mode to use and make little headway object oriented programming concepts in the entire process.

4.2 Implement of Query Function

The query function is one of the major function modules of Transaction Subsystem,not only the query mode plays a key role, but also the displaysof query results are very momentous.

To begin with, relate to the realization of query mode, utilize SELECT statement to inquiryand return the demanded field. Through the$link1 = "{$_SERVER['PHP_SELF']}?sort=idato establish a connection processing, the returned field names will form a link and in the interest of adding, sorting and other functions.

Accomplish query code is:

$query="SELECTunit_id ,unit_name,unit_address,unit_linkman1,unit_linkman1_t,unit_linkman1_m,unit_linkman1_e,unit_linkman2,unit_linkman2_t,unit_linkman2_m FROM unit ORDER BY $order_by LIMIT $start, $display";//The statement is realization of query which take arrangement as a variable insert directly into the statement to legitimize the sorting. In the meantime in order to showing pages impose restrictions on maximumnumber of records of page display.

$result = @mysql_query ($query);// Query execution

Followed by the query results, with regard toquery results, makeuse of HTML label language to build a form and display returned values. On the other hand, the switch ($_GET['sort'])functionestablished connection, which according to field sorting, and carry out the results sorting function. Specific code is:

if (isset($_GET['sort'])) {// Determine whether input a null field // sorting according to the first three sort fields switch ($_GET['sort']) {// Determine sorting by which fields case 'ida':// click on the first field $order_by = 'unit_id ASC';//Set the way of sorting, now ascending $link1 = "{$_SERVER['PHP_SELF']}?sort=idd";//Set the result of connection, alter the way of sorting, withascending to descending break; case 'idd'://Analogous to the first field, the first field set to descending order here $order_by = 'unit_id DESC'; $link1 = "{$_SERVER['PHP_SELF']}? sort=ida";break; case 'addressd': $order_by = 'unit_address DESC'; $link3 = "{$_SERVER['PHP_SELF']}?sort=addressa"; break; default: $order_by = 'unit_id DESC'; //Preinstall the way of sorting, descending order as the initial value break;}

The specific query as shown in Figure 7:

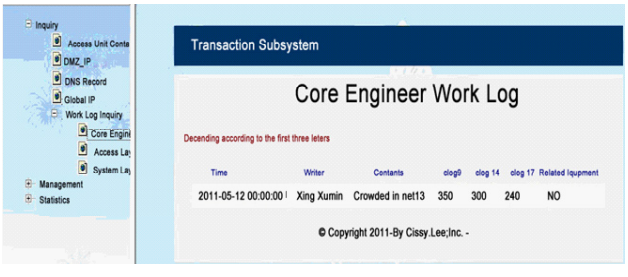

Figure 7
Queries Interface

CONCLUSION

Based on the daily demands of transaction of data center, this paper abstracts the data flow, information flow and processing work flow of working process into specific flowchart, designs and implements the technical route chart of the system, makesthe model of management information system and the preparation of the code, materializes basic functions of daily transaction of data center, and caters to categories of user's routine work requirements.

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