

# Architecture and Key Technologies of the Backup Device Management System

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**Abstract.** With the application of modern information technology in the enterprises, backup device system plays an important role during the enterprise development. In order to obtain a good development environment, an excellent backup device management system is indispensable for an enterprise. The paper will give a brief analysis of the architecture and key technologies for backup device management system.

## Introduction

With the accelerating pace of modernization, enterprise production needs a scientific management system for backup device to maintain a healthy development of enterprises. However, the premise of designing a scientific and a easy to apply backup device management system is to design a convenient and an accurate system structure, in order to build a system of backup device management for the enterprise to use on the system structure. This paper takes a backup device management system of information as an example, discusses system structure of backup device management system and the key technologies.

Backup device management system is a complex system, which can through the network, database technology and process management, financial management means instead of human to complete complex parts approval storage, production, delivery and inventory management. A good backup device management system requires stability, convenience, scalability. So the backup device management system we design spurns C/S structure that traditional enterprises usually use, using B/S structure based on J2EE technology. This structure combines the advantages of Java technology and B / S structure, with high portability and platform independence for enterprises to create a multi-user, secure enterprise-class platform to simplify application development and the system provides a strong technical support[1]. Using JSP language as interface development tool and using MySQL as database. JSP as a most prevalent web development language, with compatibility, multi-platform support, strong scalability[2], MySQL is powerful, with the development of low cost, execution speed, suitable selection of backup device system

## Backup Device System Architecture

### A. Functional Modules

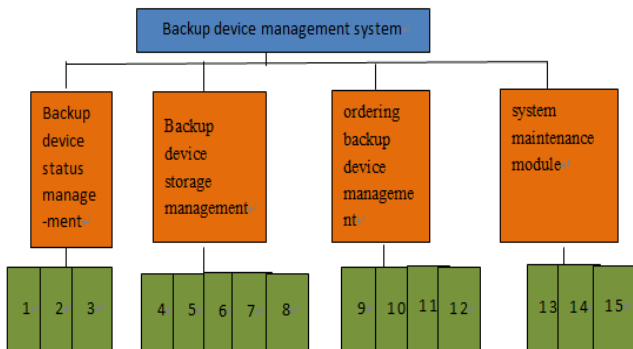
The backup device system is mainly divided into four functional modules (Figure 2-1)[5]:

Backup device status management: to manage the data included in the backup device database (including basic data and status data), the module complete the creation of backup device information, such as querying, browsing, modifying, or deleting operation.

Backup device storage management[3]: Mainly responsible for the information management of in-storage and out-storage of the backup device, you can new, query, recompose or do other operations on the approval, including backup device storage lists or backup devices stock lists before being approval, as well as various aspects of corresponding approval process.

Ordering backup device management: Mainly responsible for backup device ordering information management ,in this module you can manage the audit orders, set exchange rates and do regular analysis of the statistics of the manage content.

System maintenance module: this part is mainly responsible for personnel management, role management, resource management, etc.



Note:(1) Ensure power management (2) Dynamic storage control (3) Assist management (4)Apply for backup device (5) Backup device inventory (6) Backup device for the delivery (7)Backup device audit (8) Flow statistics (9) Order management (10) Set exchange rates (11) Analysis of statistics (12) Personnel management (13) Role management (14) Resource management

Figure2-1

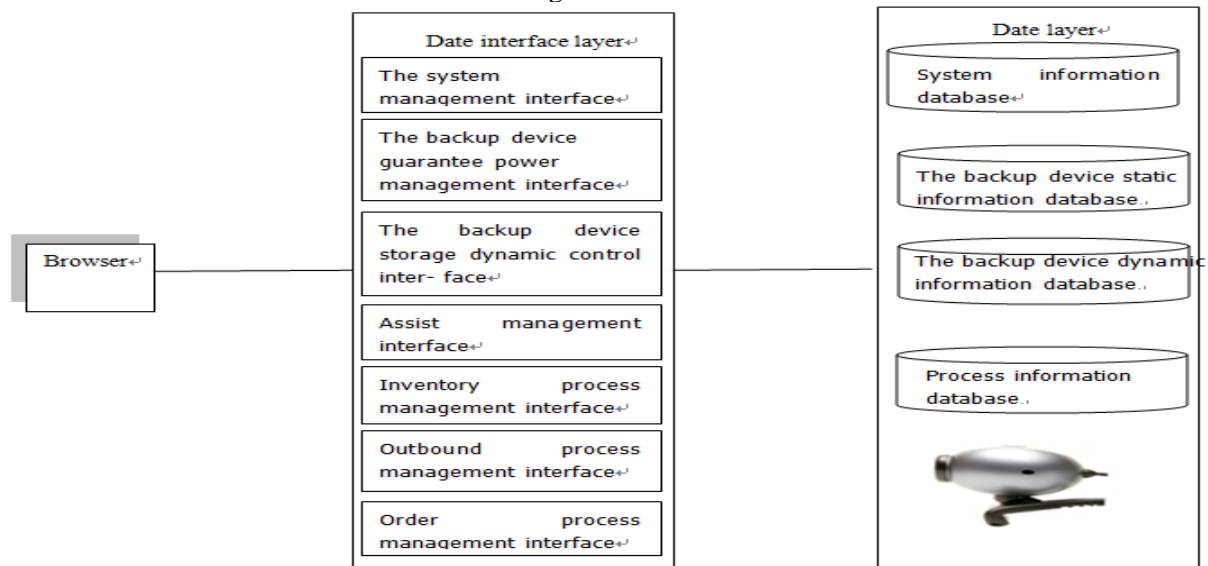


Figure 2-2

## B. Architecture

System based on the three-tier B / S structure: the user layer, the user operation interface layer and the background data layer (Please see figure 2-2).

User layer: using the browser as a user interface platform, which comes with the operating system, and the client does not need to install any other software.

User operation interface layer: the user interface in the form of the JSP page running on Tomcat server to accept the operation requests from the user, and the background data layer is applied to the data manipulation, and the results returned to the user.

Data layer: including system data, the static information of backup device, dynamic information of backup device, process information, and cameras assisted management data.

## The Realization of the Key Features

### A. Login function

In order to ensure the safety and convenience of the backup device system, refuse the unauthorized users to bypass the login page to enter the user or management page, and users do not need to enter the login information when the pages jump, it is necessary to set landing procedures for backup device system. Session object is needed here. Session object is a technology which server separate deals with and records the client user's information, and the duration of its survival

is a page. A particular user session information can be stored, so that when the user's web pages jump directly, variables stored in the session object will not be lost, yet always exist in the entire user session, which is valid before landing user leaves this website. The session information is saved on the server side, and the session id of the user's is saved in cookie[3]. And session objects can be used for security check, in order to distinguish the different roles to assign different permissions. The object code is as follows:

In "loginch. JSP" to generate the session information:

```
session.setAttribute("ID", regName);
session.setAttribute("PWD", regPassword );
session.setMaxInactiveInterval(1800);/*set the time of session object as 30 minutes.*/
session.setAttribute("role", role);
if(role==1&&validness==1)//the manager
{
session.setAttribute("isLogin", 1);
out.print("<script>>window.location=  \"admin.jsp\" </script>");
}
else if(role==0&&validness==1)//the publisher
{
session.setAttribute("isLogin", 1);
out.print("<script>>window.location=  \"adminPublish.jsp\" </script>");
}.

```

#### B. Document printing

When enterprises use backup device system, it is often inevitable to need paper documents for signature, archiving, such as the need for printing application form, so document printing capabilities are needed in the system. JSP support multiple document formats to print out: PDF ,ms word and excl. However, due to the form of the latter two documents easily modified, low reliability, such as: the number of output form is easy to modify and cause accounting errors, so we select the output into PDF format. Now, PDF has become the de facto standard for distribution and exchange of electronic documents or electronic forms ,because of its safety and reliable. We chose the PDF in the backup device system as print output document format. The "com.itextpdf.text \*, com.itextpdf.text.pdf. \*" Package can be generated by PDF documents through the JSP ,which can be based on the need for document processing, such as saving or print[4].

Simple sample code as follows:

```
response.setContentType("application/pdf" );
Document document = new Document();
ByteArrayOutputStream buffer = new ByteArrayOutputStream();
PdfWriter writer=PdfWriter.getInstance(document, buffer);
document.open();
document.add(new Paragraph("Hello World"));
document.close();
DataOutput output = new DataOutputStream(response.getOutputStream());
byte[] bytes = buffer.toByteArray();
response.setContentLength(bytes.length);
for (int i = 0; i < bytes.length; i++) {
    output.writeByte(bytes[i]);
}

```

#### C. Process Management

Process control is the core of the backup device management system, and an excellent process management method can greatly improve system efficiency, and makes the production process is simplified, and improve work efficiency

Workflow system is a software platform that makes use of computer technology to achieve workflow engine mechanism, we can implement process management solutions quickly on the

