Design of Video-on-Demand System Based on Streaming Media Technology

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Abstract—This article introduces the concept of the Video on Demand System and Streaming Media Technology. Firstly, it analyses the current situation of the Video on Demand and the user requirement. The authors consider that Video on Demand System demands to be intelligent and take developing the Video on Demand System as an example. By using vs2005 as a development tool, we develop system using web services technology and Streaming Media Technology, and then probe some troubles and experiences coming across in the process to realize Video on Demand System based on Streaming Media Technology.

Keywords-streaming media technology; video-on-demand system; style; design

I. INTRODUCTION

With the increasing mature of network communication, multimedia technology and digital compression, as long as the comprehensive application of all sorts of technology, promote the development of the Video on Demand System according to requirement which is provided with interaction function. Especially we use streaming media technology in recent years and transfer Video-audio stream smoothly with low bandwidth in the network environment. This article will reveal the realization process by designing a Video on Demand System based on the Streaming Media Technology.

II. DEFINITION OF RELATED CONCEPT

A. Video on Demand

The Video on Demand can be abbreviated to VOD; it means broadcasting programs on the basis of user requirement. It’s a comprehensive technology combined with computer technique, communication technology and also video engineering grows up with the development of the computer and network communication technology [1]. According to their own aspiration, user could watch programs selectively or adjust broadcast time, refrain from the inconvenience of waiting for program and disturbed by advertising when using traditional TV media. Users get the initiative of the information obtainment. VOD consist by three parts: servers, client-side and network system [2].

B. Streaming Media Technology

Streaming Media Technology is to transfer multi-media information in the data-network. The so-called Streaming Media Technology is to put continuous image and sounds information on the web servers after compression process. This network transmission technology enables users to view or listen while they’re downloading than after the whole compressed documents have been downloaded [3]. This technology would rebuild a crumple zone, pre-download some data before play, player procedures will take some dates from buffer when the actual link speed is less than the play speed. In this way, we can not only avoid the interruption of play, but also make a warranty of the quality. In allusion to the Streaming Media Technology’s changing from times, client-side could resolve this time issue by receiving data and playing at the same time [4].

III. OVERALL DESIGN

A. The Three Layers Architecture of System

This system uses the B/S structure (It shows as Fig. 1) and applies technical solutions of Microsoft. It applied Visual Studio 2005 as exploitation environment as well as Windows DNA has been introduced and used. Windows DNA, the application architecture is Microsoft’s latest product synthesizes PC, client/servers and Internet/intranet computer models together [5]. N-tier which usually consists of three physically separated layers: software’s presentation layer, middle business layer and data access layer are applied by development technology.

Figure 1. Tier Architecture
B. The System Module Design

The system module design which plays a key role in the success of the system is main framework of the whole system. As Fig. 2 shows, server information management, regional information management, company information management, video classification management, video information management, video tags management, video actor management and video director management. Rights management is to make video on demand and this system also could release music, karaoke or picture and so on. This system develops design pattern of object-oriented and do a great deal of good to expand systemic function, for many new features are add, systemic function would be key development part.

![System Module Design Graph](image)

System basic setup module includes three content blocks: information services manager, regional information management and company information management. In this module we can set servers to release streaming media, movie area information and the release of the movies’ company information, these are basic setup of movie information in VOD.

Video information management module includes five parts: video classification management, video information management, video tags management, video actor management and video director management. In which can set tags and classification of releasing movies. Tags are auxiliary information in favor of inquiring the video information when classification cannot comprehensive described.

User Permissions Settings: every system has a Permission Settings module, in which one can set different permission to each user—whether users have rights to add, delete, search or change. For example, super user has the greatest privileges and could add, delete, search or change each user’s information; administrator could add, delete, search or change information which posted by system as well as normal user only has right to check these information. In this way can manage system better.

Searching Module: here we could search information of actor, director, movie, area and company, also can do conjunctive query to tags or initial of movies. The search is convenient here.

Foregrounding display Module: including index, Video information on the secondary pages and play page. Nowadays, the development of network technology and programming technology are very quickly, the website interface is the key to catch user’s eyes.

IV. DESIGN OF SYSTEM DATABASE

The system uses the Windows2003 operating system as the database server and the application of the system platform, use Microsoft SQL Server2000 design video on
demand in the system's database. According to the functions of the system design, for manageable and reliability, we use a library of more table way to establish a VOD database, data, the list includes film information table, film label table, film the sorting table, access list, users table and so on 12 tables. This system involves the Table 1 below.

<table>
<thead>
<tr>
<th>table-name</th>
<th>remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vod_Actors</td>
<td>actor information table</td>
</tr>
<tr>
<td>Vod_Companies</td>
<td>company information table</td>
</tr>
<tr>
<td>Vod_Countries</td>
<td>area information table</td>
</tr>
<tr>
<td>Vod_Directors</td>
<td>director information table</td>
</tr>
<tr>
<td>Vod_Hosts</td>
<td>host information table</td>
</tr>
<tr>
<td>Vod_Module</td>
<td>module information table</td>
</tr>
<tr>
<td>Vod_MovieColumns</td>
<td>movie columns information table</td>
</tr>
<tr>
<td>Vod_MovieList</td>
<td>movie list information table</td>
</tr>
<tr>
<td>Vod_Movies</td>
<td>movies basic information table</td>
</tr>
<tr>
<td>Vod_Tags</td>
<td>tags information table</td>
</tr>
<tr>
<td>Vod_UserPurview</td>
<td>userpurview table</td>
</tr>
<tr>
<td>Vod_User</td>
<td>user information table</td>
</tr>
</tbody>
</table>

V. CONCLUSION

The system uses today's popular technology asp.net for development, and combined with streaming media technology and database technology. Not only has it high efficiency of development, but also is stable and fast. With this the system has huge potential market and profound development prospects, and the attention is increasing. Video on demand system involves widely in technology, and by the way of using streaming media technology on video on demand system to design and implementation. Though there are still some shortcomings, with the development of digital code compression technology, network storage technology and multimedia technology unceasing, video on demand system will be constantly improved and perfected, and will become a promising and great challenging research direction.

REFERENCES


