Research Paper

Volume : 3 | Issue : 2 | February 2014 • ISSN No 2277 - 8179

Dataplexed Network Attached Storage System

Engineering

KEYWORDS : Client-server system, Centralized system, Peer-to-peer, IP address, NAS, Cross-platform

Praveen Vijai	Lecturer- Govt. Polytechnic College, Perumbavoor, Ernakulam ,Department of Computer Science Engineering, Mahatma Gandhi University, Kerala, India
Minnu Meria	PG student- Adi sankara College, Kalady, Ernakulam, Department of Computer Science Engineering, Mahatma Gandhi University, Kerala, India
Midhu Babu	Assit Prof -Rajiv Gandhi Institute of Technology, Kottayam, Department of Computer Science Engineering, Mahatma Gandhi University, Kerala, India

ABSTRACT

This paper proposes a system which aims to resolve the problems associated with traditional client/server systems, namely the high performance requirements, and costly maintenance of the computing resources. With the traditional model, information's are stored on servers and downloaded to clients as required, where they are then accessed locally. After updation, the information's are saved back to the centralized. However information's stored in a centralized system are dependent on an OS and a native file. Centralized storage always harbors a possible risk of total loss of data due to system hang-ups & disk crashes. Having to know the specific information like IP address of a system or having to create localized user accounts on each peer system to access shared resources in existing system is also pretty discouraging. We propose Dataplexed NAS System [Dataplexed Network Attached Storage System], a cross-platform distributed file system, which provides strong security and client/server heterogeneity both at hardware and operating system level.

INTRODUCTION

In computing environments today there is a shift away from the conventional client/server paradigm, to a more network-centric environment. In the client/server model, user data is centralized on servers, but applications reside and execute on "fat client" desktop computers, which have local storage and full operating system. While these desktop machines provide good performance with friendly user interfaces, they are expensive in terms of their high performance requirements and maintenance is costly, as it must be performed locally. The network-centric model tries to solve the problems associated with these conventional client/server systems. With the network-centric model, applications are stored on servers and downloaded to clients as required, where they are then executed locally. User data is saved back to the remote server.

However these applications lack a standard file system where they can store their data files. When these applications are run as applets in a web browser, they are prevented from accessing the local storage system by the Java environment. Thus Dataplexed NAS System, a secure distributed file system, implemented in Java for use by these applications.

D-NAS System aims to resolve the problems associated with traditional client/server systems, namely the high performance requirements, and costly maintenance of the computing resources. With the traditional model, information's are stored on servers and downloaded to clients as required, where they are then accessed locally. After updation, the information's are saved back to the centralized. We propose Dataplexed NAS System [Dataplexed Network Attached Storage System], a cross-platform distributed file system, which provides strong security and client/server heterogeneity both at hardware and operating system level. Dataplexed NAS System allows the distribution of the file service across a number of systems.

EXISTING SYSTEM

At present for any peer to peer system, programmers themselves are responsible for the security of their data. Backups allow you to restore the availability and integrity of information resources following security breaches and accidents. Without a backup, you may be unable to restore a computer's data after system failures and security breaches.

They take back-ups either in floppy drives or in the system hard disk wherein no perfect security can be assured. Backups can also be taken in magnetic tapes and disks, but they are much costly to afford.

Another draw back of peer to peer system is the total loss of information caused by system failure and disk crashes. One should know the localized user accounts on each peer system to access shared resourses. Sharing of confidential informations like ip address,user id,and password may lead to hacking and cracking..As in client server architecture redundancy and congestion may occur. As the file server may be accessed by multiple clients there is a possible risk of issues of concurrent access.

In Conventional Client Server Model user data is centralized on servers, but applications reside and execute on client computers. Client computers have local storage and full operating system. While these desktop machines provide good performance with friendly user interfaces, they are expensive in terms of their high performance requirements and maintenance is costly, as it must be performed locally. The network-centric model tries to solve the problems associated with these conventional client/server systems With the network-centric P2P model, applications are stored on peers and downloaded to another as required, where they are then accessed locally. Drawbacks of Traditional System are:

- Possible risk of total loss of data due to system hang-ups & disk crashes
- Specific information like IP address of a system should be known.
- Requires localized user accounts on each peer system to access shared resources
- Increased network traffic
- Duplication of data
- Bottleneck Problem
- Network Congestion

PROPOSED SYSTEM

The DNAS System is designed for people who want to maximize backup reliability while minimizing the need for local backup equipment and handling of tapes. It is a software package that provides automated, centrally managed, reliable backup facilities for a variety of workstations. To cover the cost of the backup server hardware, data storage media, operations, and system support, there is an extra charge for this backup option. Network Backup is an enterprise-level backup product capable of protecting your most valuable data. Risk of increased network traffic, congestion, platform heterogeneity should be resolved.

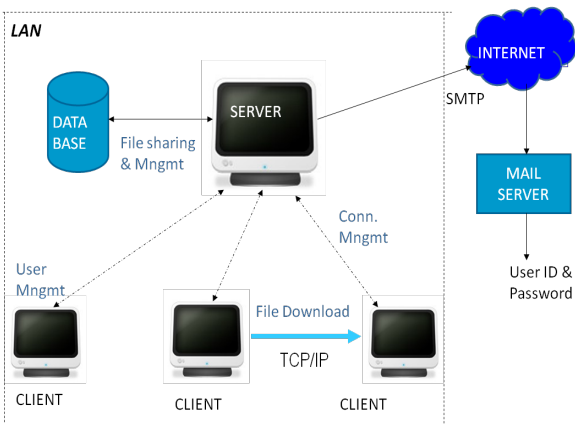

Figure 1: Proposed System Architecture

A database holds login info ,user info file info, group details, user files, group files etc. Files can be shared and down loaded. Shared files can be edited or removed by the group owner. Its features are

- Centralised databank concept
- The system is secure, platform independent & transparent.
- Network distributed information storage controller
- Future multi service (multimedia) networks will carry traffic such as video, audio, and computer data with diverse requirements. Such networks will thus require that we develop ways to manage many physical and logical entities, services, and users.

IMPLEMENTATION

On analyzing the proposed architecture it needs four main functional blocks. One is to manage the connection between server and various clients. The functions are separated and implemented as four main modules.

A. Connection Management

1) Server Management:

Server listens for connection requests from clients when connected server starts Connection Management Thread. Its then an instantiate Client Manager Thread. A Request Handler subclass handles all client request .Hash Table is used for mapping its fields are IP address of client & Client Manager ID

2) Client Management:

It creates an instance of client socket

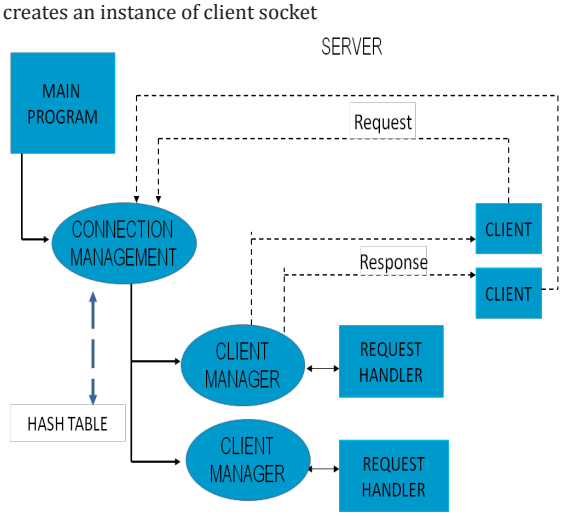

Figure 2: Connection Management flow diagram

B. User Management

1) Registration:

Initially, all the users who wish to use this application have to register themselves. In this module all the users are registered with the server. At the registration time we should specify the mandatory fields like name, email id, phone number etc. Database Connection management steps involved are Load driver, Connection establishment, Create statement, Execute query

2) Send Mail:

User name and password is mailed to registered users .It is done after the validation process by administrator. My message class represents the mail. It has To, From, Subject, Body & Attachments. Mail is sent using SMTPS (through SSL).

3) User login:

User can login using User ID & Password sent by Administrator. When the user gets registered, he is provided with a randomly generated password. In Login, the user first logs in by using the username and password that is provided to him once he is registered.

4) Approval & Broadcasting:

When DB is updated Administrator approves the new user registration. This information is broadcasted to all user who are currently available .Handled by java.io.file class.

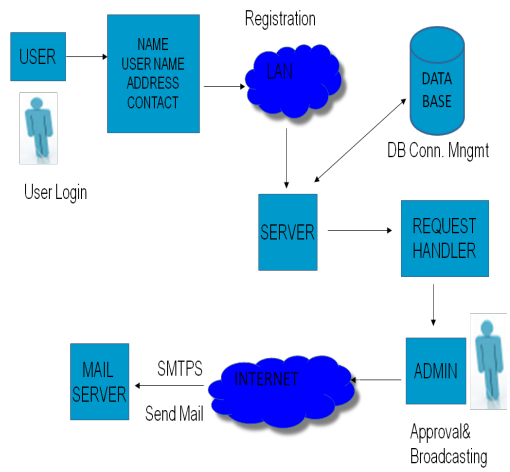

Figure 3: User Management flow diagram

C. File Sharing & Management

1) Share management:

In this, the user can share his files as per his choice. The user browses the file he wishes to share. The file to be shared is then given to the user or a group of users as per selected. Whenever a file is shared a broadcast message is sent to all users. Sharing may be Public, Private or Group.

2) Group management:

Owner can create new group, edit or delete existing group.The user is also given an option to decide whether the file is to be shared either individually or to a group. While creating a group, he can select the number of users as per his wish.

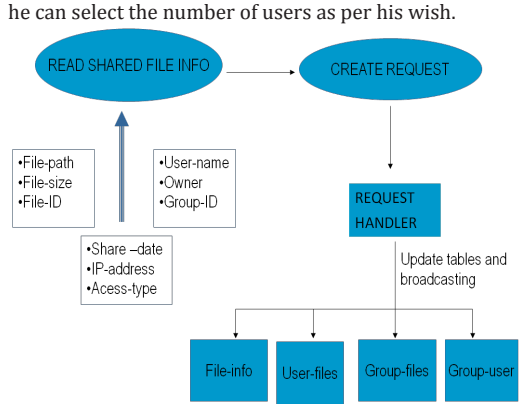

Figure 4: File Sharing & Management flow diag.

D. File Download

Once a client logs in his account, he has an option to download the files the other user(s) wishes to share with him. Only from these the client can download the file. This is client- to- client communication but to the client, he feels as if he is retrieving the data from the server directly. The server just provides the path and ip address by means of which the client connects with the file shown in his list.

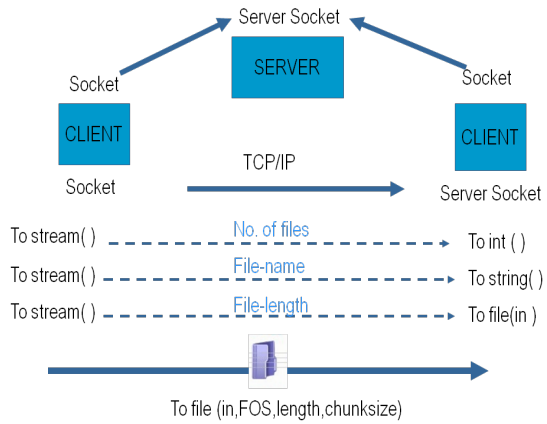

Figure 5: File Download flow diagram

Future Enhancement

The system can be enhanced by adding new modules. The facility of the system to inform users about successful registration is provided by mailing. Authentication is done by user name and password. The other scope is that informing the registered users about recently uploaded files through mail. Both public and private file sharing is possible. In private sharing a file & folder can be shared to an individual or to a group. The group is owned by individuals and can control access to shared items.

Hardware and operating system heterogeneity – The system should provide a mechanism to allow multiple file systems, each running on a different file system type, to interact with each other, thus providing one global file system to its clients.

The objectives specified, while starting the system designs are achieved. As the progress in life is advanced from the known to known, the future of any Software packages lies in its ability to progress from the specified to the general.

The basic structure of the product was designed in such a way that the incorporation of additional utilities and function could be accomplished very easily without any changes in the basic design.

CONCLUSION

Using a file sharing program, you can communicate, share, edit, and view files with in a LAN connection. A majority of team members are now involved in different aspects of document creation, often in different locations, or even working for different companies. The ability to share documents easily and securely via the network is a growing need among businesses worldwide. This enables you to store, access, organize, and share your files through one central location. It is an information storage controller which is network distributed.

It provides an easy registration process for the users. & provision for updating the user profiles. Low cost and Maintenance -ease to install software make it suitable to a number of applications. Transparency issues, location and access is resolved well. As there are no native codes the project can be implemented in any platform.

The system can be improved by adding more functional capabilities .It can be extended to a WAN and Wireless WAN. Mailing is done to inform users about successful registration.

REFERENCE

[1] S Lo-zhong Geng, Hui-bo Jia, "A Novel Intrusion Detection Scheme for Network-Attached Storage Based on Multi-source Information Fusion", International Conference on Computational Intelligence and Security 2009, Vol:2, Pg no:469-473. | [2] Dalle.O., Giroire.F., Monteiro, Perennes.S., "Analysis of failure correlation impact on peer-to-peer storage systems, IEEE Ninth International Conference on Peer-to-Peer Computing, 2009, Pg no:184-193. | [3] Yunqi Ye , I-Ling Yen ; Liangliang Xiao ;. Secure, Highly Available, and High Performance Peer-to-Peer Storage System, 11th IEEE High Assurance Systems Engineering Symposium, 2008. Pg no: 383 – 391 | [4] The IBM website. [Online].Available:http://www-03.ibm.com/systems/ storage/network/ | [5] Drakopoulos, E.; Merges, M.J. Performance analysis of client-server storage systems, IEEE Transactions on Computers Vol:41, Pg no: 1442-1452 | [6] Herminghaus, Volker, Scriba, Storage Management in Data Centers ISBN 978-3-540-85023-6 | |