



File Transferring Web Application Using Node JS

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ABSTRACT

File sharing is the practice of distributing or providing access to digital media, such as computer programs, multimedia, documents, or electronic books. Daily there are millions of file transfers happening. So it becomes a necessity to develop scalable software which can share these files fast and efficiently. File transfer allows the sharing, transfer or exchange of a file or data object between different users and / or computers systems over an internet connection. Node.js is a server-side platform primarily used for real-time use due to its 'event-based architecture' and 'unrestricted I / O'. Node.js is 10 times faster than I/O services.

Keywords: - Node.js, server-side platform, event-based architecture.

1. INTRODUCTION

With the use of Node.js framework in combination with the JavaScript for the web applications implementation is getting common in practice. In this article, a file transferring for a real world application with Node.js functionality is presented. Node.js delivers event-run programs on web servers, allowing for faster development of web servers in JavaScript. It takes the time for servers to spend a lot of time waiting for I / O performance, such as reading a file on a hard drive, accessing an external web service or waiting for a file to finish uploading, as these tasks go much slower in memory operations. As all I/O tasks in Node.js are asynchronous, the server can continue to process incoming requests while the I/O function is performed.

2. LITERATURE SURVEY

File sharing is the sharing of public or private data on a network with different levels of accessibility. Depending on the access permissions, file sharing

allows a selected number of people to read, view or edit the file based on the level of authority provided by the file sharing. File sharing services typically provide a certain amount of file storage per user per account. Files started to be exchanged on removable media. Computers were able to access remote files using system mounting, notification board systems (1978), Usenet (1979), and FTP servers (1970's). Internet Relay Chat (1988) and Hotline (1997) enable users to communicate remotely via chat and file exchange. The mp3 code, which was discontinued in 1991 and significantly reduced the size of audio files, grew in popularity in the late 1990's. In 1998, MP3 and Audio galaxy were introduced, the Digital Millennium Copyright Act was unanimously passed, and the first mp3 player tools were launched. Since then, there has been development of many tools for file sharing such as

- i.) Peer-to-peer files sharing - There are many file sharing applications between computers and cell phones that share files within another network. Some of

these applications are computerized and some are mobile. However, peer-to-peer apps are causing a lot of internet crowding. SymTorrent, BitTorrent, Gnutella, Napster, and eMule are the most popular apps for peer-to-peer programs. Much research has been done on algorithm, modeling, and ratings for different peer-to-peer applications. Some of these are reviewed in this report to help the developer create a better system among mobile devices or other powerful devices. Peer-to-peer file sharing is based on peer-to-peer (P2P) application development. Files shared on other users' computers are displayed on directory servers. P2P technology is used by popular applications such as Napster and LimeWire. The most popular P2P sharing protocol is BitTorrent.

ii.) File sync and sharing services - Cloud-based file syncing services and sharing services utilize automatic file transfers by updating files from shared index to individual user network devices. Files placed in this folder are also usually accessible via the website and mobile app, and can be easily shared with other users for viewing or sharing. Such services have become popular with consumer-oriented file capture services such as Dropbox and Google Drive. With the growing need for easy file sharing online easily, new open access sharing platforms have emerged, adding additional services to their core business (cloud storage, multidevice syncing, online collaboration), such as ShareFile, Tresorit, Transfer, MeeroDrop or Hightail. RSYnc is a traditional system released in 1996 that synchronizes files directly from a machine. Data syncing can often use other file sharing methods, such as distributed file systems, version controller, or mirrors.

iii.) File transfer protocol programs (FTP) - The most common online file transfer system to date is known as File Transfer Protocol or FTP. FTP is used to access or edit files within a set of number of users with a password. Users can then gain access to shared files on the FTP server site. Many FTP sites provide sharing of public files or allow users to view or download files using passwords. Example: Cyberduck, Firefox.

iv.) Removable storage media - Unlike RAM, this involves anything that can be physically removed from a device or computer. The user can transfer or upload files from his device to removable media storage and virtually deliver them to anyone who would like to

share the files with him. This may include the FTP server for security purposes, requesting a valid login and password for others to allow access. Example: Memory sticks, optical discs, memory cards and removable hard disks

3. CHALLENGES

I. Latency Issue - Latency is the time it takes for data to move from one place to another. The latency is measured between the user's device ("client" device) and the data center. This rating helps developers understand how fast a web page or app will load for users. Latency is sometimes referred to as a delay or ping level. The lag you get while waiting for something to load. If bandwidth is the amount of information sent per second, the latency is the amount of time it takes to get that information from its source to you. Since the application is running on a single server there could be a lag if many people use it at the same time.

II. Scalability - The application can handle 10000 concurrent users without issue and can process upwards of 1000 requests per second with the help of nodejs. But if the number of users increases then there can be performance problems caused by limited capacity of servers and network.

4. OPPORTUNITIES

i.) Fast flow of data - Node.js is built from the ground up for the purpose of managing non-compliant I / O as it is built with JavaScript and JavaScript is built as an event loop. Like a button-click event on the client-side JavaScript is an event loop. Although some sites have this feature, they do use it through third-party or non-built libraries for the same purpose as Node.js and that is why they are often slow, or delayed and are not a common feature in them. Due to this it is capable of very quickly delivering data to and forth from a web server.

ii.) No size limit - MongoDB is designed to back up humorous information. It is a NoSQL website with text-based storage, full index support, high duplication and availability, and more. MongoDB can easily handle billions of texts and can contain billions of texts in one batch. Applications such as WhatsApp where we can share files up to 100MB while in the app there is no limit to file size.

iii). Saving Storage -When we forward the file to individuals, WhatsApp creates duplicates of the same file, which reduces our system memory and slows down the system. The application temporarily saves user data on the server, which helps to save storage and increase system performance.

iv.) Easy to use Interface - The user interface (UI) is the point at which human users interact with a computer, website, or application. Effective UI aims to make the user experience easier and clearer, requiring minimal effort from the user to achieve the maximum expected results. The application has simple interface which makes it easier for the users to use the application.

5. DETAILS

The main idea behind the file sharing application is to offer a web-based platform, where documents, images or any other data can be shared without any size limit. The application helps in saving storage and also saves the cost of the client as it does not have to use paid applications like Dropbox, Google drive and others. The actual core functionality of the platform is a file-sharing web application in which the client can upload the document without any size limit. After uploading the document, a link will be generated which the client can share with other people. There is also an option to share the document using email. Node.js is a software platform that allows you to create your web server and build web applications over it. Node.js comes with its "npm" package manager, which allows for easy distribution and installation of thirdparty libraries and their dependents to expand existing development projects. Aid consideration of all the benefits of Node.js, it is not surprising that many great players from various industries, such as Uber, PayPal or Netflix, welcome them to their projects. There are different ways of structuring the code, but the one that is quite popular now is the MVC structure {Models, Views, and Controller}. On sending a request, there is a set of functions that handles all the requests that are coming in from the user {for eg - home, user, profile}. Now, each of them is mapped to a function that function is written in a file or a set of files called controllers so whenever a Request comes in it goes to the router where it goes into a map wherein {home is mapped against a function named as home controller, etc.} that function is get

called and that function has all the logic of what data should be sent back {Controller - It is a set of function or single function}.

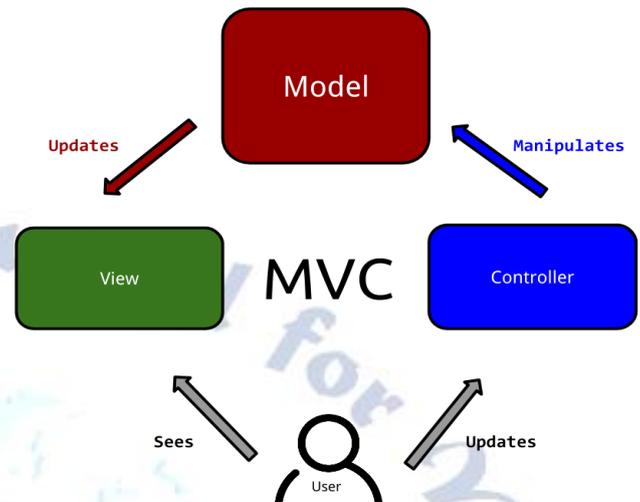


Figure 1 – MVC Structure

A lot of frameworks use MVC structure like Express.js, python, sails, etc. Express.js is used as it does not tell you to design your folder in a specific manner. Express is a framework and many other frameworks are built on it. Databases are the persistent storage so on restarting the server there is no chance of changes getting removed. There can be two ways of storing the data - tabular format like MySQL or Binary JSON like Redis, Mongo Db. Mongo Db is used as the database for making the web application as it is easy to use and don't need to define the tabular structure inside which rows and columns. MongoDB gives us two important stacks - MEAN and MERN stack. It is quite popular these days.

6. CONCLUSION

The main purpose of this web application is to allow a number of people to use the same file or file by some combination of being able to read or view it, copy it, or print it.

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