Online-Offline Data Synchronization for End User

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Abstract—**Now a days the data synchronization based on Web Services. It will allow software applications to work on both configurations "Online" as well as "Offline", in the absence of the network. Reliability of the system is always given higher priority whenever multiuser system is been developed. Involvement of the end users in this process is very important. The aim of this paper is to make a reliable system with no faults to the end user. Thus, information about reliable software applications is important. It will be hard to achieve consistent level of reliability for every complex system that includes multi user and data manipulations. If the connection is lost, system works with local server, that is it saves new data in local server which are not in central server and in this case the synchronize component should synchronize data with data centre when connection is present. Thus, we can increase the reliability to the end users.**

*Keywords:*Online-Offline mode, Data Synchronization, End-user, Local Server, Web Service.

I. INTRODUCTION

Now a day's large part of digital data communication is reliable on transferring information across computer networks in the form of file transfer. Making file transfer efficient, reliable and user friendly is one of the most important considerations. Most programs provide swarm of details which makes, setting up file transfer complicated over direct connection fornon specialist user [1][9]. This provides user greater control over their transfers but also increases the chance of errors. Indirect file transfer, similar to instant messaging system, can be easily implemented but, they fail in utilizing full potential of user's connection and slow down transfers. This synchronization is to enable user to access a particular data record through a device other than the one on which the record was created or last modified. User can perform operations such as read, change or delete a specific data record by accessing any of its available replications. Thus, such a way of independent access can embrace any type of file or web content.

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A. Data Synchronization

In is necessary to maintain consistency between data transferred from source machine to target machine. One of the ways to do this is by performing data synchronization. We need to maintain data synchronization in case of other system in offline mode. Supporting mobile and remote works is becoming more important for organizations. It isdifficult for organizations to provide access to the same information they have when they are in offline mode. A synchronization protocol decides rules for user data distribution, conflict resolution, and device reconciliation. All these implemented rules affect system – performance, time, network scalability, computation and memory estimation. The synchronization mechanism focused in this paper enables change detection, conflicts resolution and reconciliation [2][4][5].
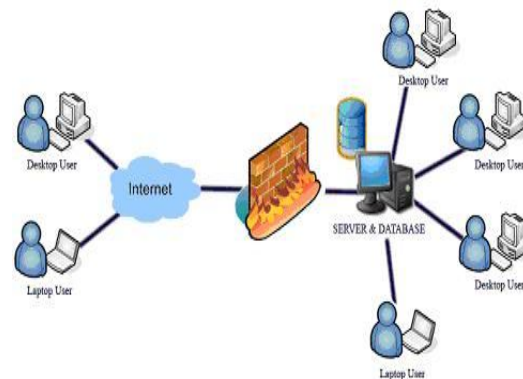

Fig. 1

B. Online/Offline Mode

Online/offline mode is two methods of data synchronization which is used to check the network is available or not. In an online mode, the communication between two or more end-users, clients can be successfully communicated, for both are available. Similarly in offline mode, one client is available and other is an unavailable that means the communication are not success, so data will be not sent, even if the network is available[7][4].

The real time examples are What's Up, Facebook Messenger, Hike Messenger etc. In working of messenger the user can send the message to another user, if he/she is online then it can be directly receive this message. If he/she is not available in network then the message will be stored in the web server, if he come into the network then it receive message.
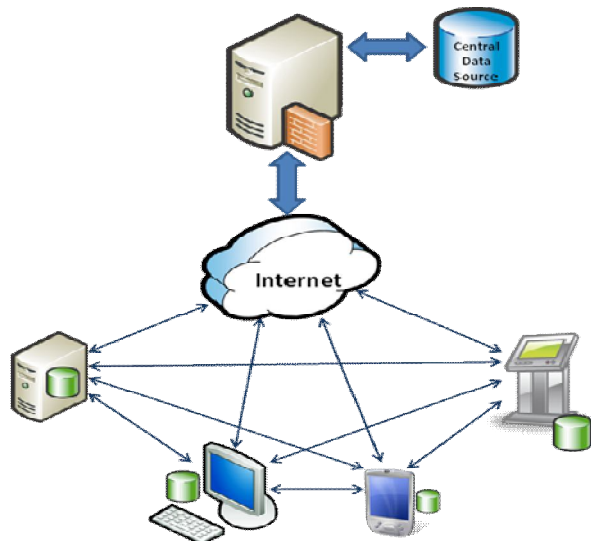
Fig. 2 Data Synchronization in N/W

II. RELATED WORK

IsakShabani, Betim C & Agni D [1] have proposed a system for solving data synchronization problem in absence of network. For this purpose it is use ESMS at UP with their module. It is use ESMS, that data synchronization technique for solving the interruption of electricity failure and network failure.

Naveen Malhotra,Anjali Chaudhary [2] have proposed a system for database synchronisation for client and server. They have implemented and use simple networking algorithm for solving the client and server data synchronization problem.

III. EXISTING SYSTEM

Today we still face a problem with reconstruction of infrastructure. Main problems that are been faced are non-regular power supply, connection-drops, server-drops, that presents big drawback in software applications. Such problems can cause interruption at work and inability to do the services on time [9][11]. All this problems eventually results in bad service to users. Such problems can occur in many web services.

Disadvantages:
1. Exiting system can provide less reliability.
2. Data loss chances are more.

IV. PROPOSED SYSTEM

We have proposed a system that will work parallel online and offline. Here the data will be transferred in both local as well as central server. The system is designed to provide faster rate of data transfer and reliability from user's point of view.
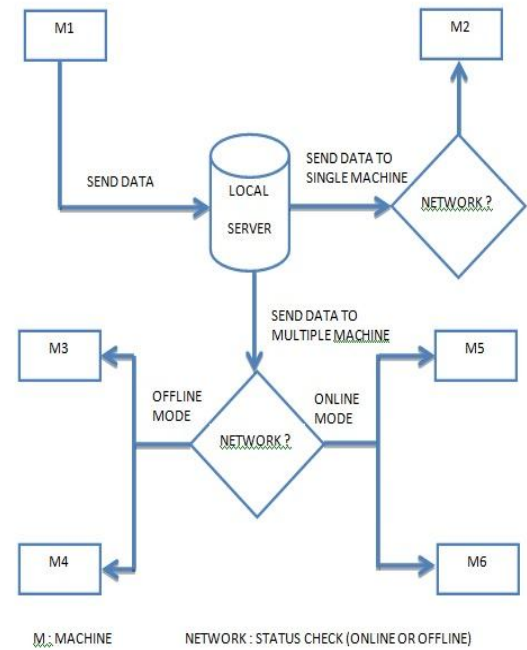
A. System's working:

Fig.3 Working System

This System will work in both states for online as well as offline, it means that the data transfer will take place in both local and central databases. If the connection is lost during data transfer the new data is being saved in local servers. Further when the connection is present the local server synchronizes the data with data center. If both the machines are in online mode then the data transfer will take place directly. But if the situation is such that one of the machines is in offline state the working of local server will come into picture. The local server will store the data temporary till the other machine come in online mode. It provides more reliability to the proposed system.

When machine sends data over network it is first transferred to local server local server verifies whether the required system is in online mode. If the system is online mode the data transfer takes place accordingly or else the server waits till the system comes in online mode. The data transfer can take place between one-to-one machine or one-to-many machine.

Now let us consider a scenario that few machines say M1, M2, M3, M4, M5, M6 are connected over a network. Machine M1 performs data transfer over a network by sending data. Local server is the intermediate server between all this machines which maintains synchronization. The data transfer between machine M1 and M2 will be of the form one-to-one transfer. The local host will first check if the machine M2 is in online mode or else will wait till it comes to online mode. The data transfer takes place in one-to-many form when machine M1 performs data transfer to all other machines. In this case the local server immediately transfers data to all other machines which are available online and then waits till other offline machines to come online.

B. 3-way handshaking algorithm:
Nearly all TCP connections begin with a "handshake", it is one of the important feature of a connection-oriented protocol.
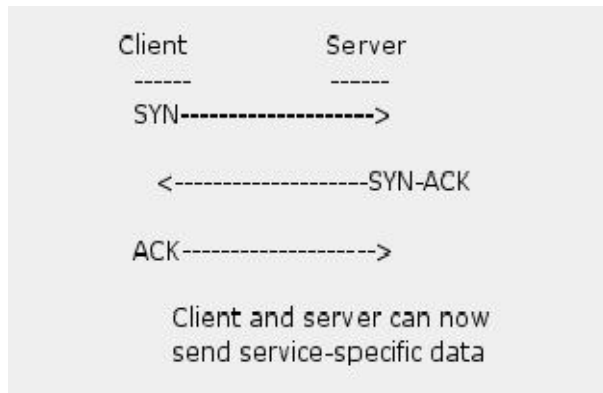

Fig. 4 3-Way Handshaking

Because there are three steps to be performed for establishing connection it is referred as "3- way handshaking." The connection begins with Client/host sending a synchronous packet to another host/server. The packet consists of initial sequence number and a pseudo random number. It represents beginning of TCP session.
Next the server acknowledges the clients SYN, and generates its own SYN. This "SYN/ACK" contains both server's ISN, as well as an acknowledgment number.

V. CONCLUSION

The System reduces the human efforts, to reduce the human efforts towards the manual data entry whenever user for the system is in offline mode and not connected to the centralize database of the system. The system automatically synchronizes the data to the centralize database whenever the user becomes the online so the data loss of the offline mode is avoided. All the operations of business are secured and do not affect any data loss as system is connected to centralized database.

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