**Other Challenges**

Another challenge in this project is the reliability of the system. Failure handling is a problem which should be considered carefully. It is inevasible for a distributed system to occur failure. In this project, some of failure, the failure of the operation from clients mainly, can be detected by the system. For these failure case, the programs of the server contain detection and error response parts. Once the server finds the information inputted by the user is incomplete or unexpected, it will return the response which contains information about the mistakes so that the users know that the operation is unsuccessful. Take another example, a timeout setting is used in the client. If it occurs some failures which make the transmission failed, it will transmit the message again.

However, there are failures that the system in this project cannot handle well. The basic structure of this project contains two servers. The resources stored in these two servers are different, which means that there is not any backup of these published resources. If any server breaks down due to an unpredictable accident, the resources stored in the server is possible to be damaged or lost. The possible improvement is to back-up the resources in both two servers. Although it may waste space to store repeating resources, it will increase the reliability of the whole system. In this case, in order to implement the backup in two servers, the server which is visited by the client should send message to the other server to update the backup when the user uses publish or remove function and changes the resource list. Also, this will occur the concurrency problem which was discussed before. In addition, the backup procedure should be designed with high efficiency to guarantee the backup in other servers is updated in time. The waste of the network performance is also a challenge in failure handling design[1].

In conclusion, for a distribute system, reliability is important. Failure handling design make the system work with high reliability. Once failures occur, the system should keep the influence of users’ work as small as possible.

**Reference**

[1] Textbook

Coulouris, Dollimore and Kindberg, Distributed Systems: Concepts and Design, Edition 5, © Addison-Wesley 2012

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