

Abstract

Network availability is of most concern to users, vendors and service providers. Although work has been done in wire line networks to improve its dependability, reliability and other aspects of it, not much work has been done in the area of wireless networks. As wireless networks are highly likely to have availability issues more specifically data availability issues, I believe that some work is needed to target these problems in wireless networks but concentrating more on the problem of data availability. The aim of this project will be to evaluate mobile agents in their use related to wireless applications particularly file transfers. Specifically this work looks at a few architectures to improve the data availability problems faced in wireless networks, plus a model simulation evaluating the architecture involving the use of mobile agents to improve data availability in a wireless network.

Mobile agents along with wireless networks are two technologies that together will show great improvements for increased connectivity, communications and data availability. Mobile Agents are programs that are able to physically travel across a network from machine to machine autonomously and perform different tasks on these machines [1]. These machines are able to provide agent hosting capability. Mobile agents are able to carry with them their state as well as data across wireless networks. Wireless network technologies provides computers, mobile phones, mobile laptops and handheld devices with connectivity in a network without any physical connection, that is the linking between devices are put into effect without the use of wires.

These technologies mobile agents and wireless networks are quite amazing by themselves but together they are extraordinary. A new wave of computer interactions using mobile agents gives an array of opportunity to developers to develop software applications based on computer connectivity. This will allow mobile agents to move around wireless networks in a much seamless manner compared to other applications comprising of static models,

like the client-server architecture. It is this seamless manner that allows mobile agents to improve the availability of data in a wireless network.

This work looks at various design techniques to improve the availability of data within wireless networks with the use of mobile agent technology. In this project two prototypes were developed, one for a file transfer over a network with the use of mobile and static agents and the second application uses a client/server architecture over a network. In both cases the times taken for files to be stored and the times taken for files to be retrieved over the network will be compared. Bandwidth as well as the number of transmissions of data sent for each file transfer (store and retrieval) over the connection will also be compared for both mobile-agent and client-server prototypes. Each prototype uses a JDBC database to hold data pertaining to clients and their files. The programs were developed using Java JDK1.6. The conclusion highlights the benefits of mobile agents in the improvement of data transfers and availability.