MSc Project Report

A lightweight user-space network driver for high performance file transfer

Damith Nelanka Wickramasinghe

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Abstract

Today systems use various communication paradigms to send data from one point to another. Among these, file transfer has become one of most important technology which revolutionized the work done today. It enables to transfer of data or logical segment of data between different users or computers both locally and remotely. These data can be structured or unstructured. Because of the importance, there are dedicated servers that provide these facilities.

File transferring is usually governed by its underline protocol and the current most popular protocols are File transfer protocol (FTP), Transmission control protocol (TCP), and Hypertext transfer protocol (HTTP). When choosing which protocol to use, we need to consider various factors like reliability, security, latency. Hence data can be available to target systems as soon as possible so that their work can be carried out quickly.

The aim of this thesis is to explorer current issues in existing protocols and find possible alternatives to allow data transfer more efficiently between systems. To achieve the objective a newer approach is used which directly links kernel to user space in network message transferring. Test results indicate that harboring this new technique we can achieve almost 60% - 40% performance on small files and 15% - 20 % performance on large files other than traditional message transferring protocols. The evaluation of the survey depicts that said technology can be used in different domains which could provide great efficiency resulting in saving both time and money in the big data world.