CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Number
J0923

Project Title
Transfer Your Data, Save Your Dollars: A Cost Analysis of Transfer Speeds on Various Network Switches and Cables

Abstract

Objectives/Goals
The objective of this project is to determine if the cost of converting category 5 cable (running 10 100 switch) to category 6 cable(gigabit switch) correlates to the amount of speed gained when transferring data.

Methods/Materials
Using two identical Windows based computers, I created a network by connecting one end of a Category 5 cable to an Ethernet port on Computer A and the other end to a port on the 10/100 switch. I connected a second cable to computer B's Ethernet port and again to the 10/100 switch. I then downloaded a 594 MB, 361 MB, and 104 MB file to the network and I transferred each file from computer A to computer B. I timed the transfer speed of each file by using a stopwatch and recorded the estimated and the actual transfer times. I repeated this same process for a total of 25 trials of Cat 5 on the 10/100 switch, Cat 5 on the gigabit switch, Cat 6 on the 10/100 switch, and Cat 6 on the gigabit switch.

Results
After completing my project, I found out that my hypothesis was correct. I had hypothesized that it would NOT be cost effective to convert from Category 5 (10/100) to Category 6 (gigabit). My results showed that, on average, Category 5 cable cost $4 while Category 6 cost $12 (200% increase); network switches increased in price an average of 900% ($25 on10/100 and $250 gigabit). The average transfer speed on Category 5 (10/100) was 8.3 seconds faster than Cat 6on 10/100; average Cat 5 gig was 1.19 seconds SLOWER than Cat 6 (gig). Cat 6 gig did average out with a faster transfer speed when compared to the Cat 5 10/100.

Conclusions/Discussion
Although Cat 6 on gig did transfer faster than Cat 5 10/100, a home network cannot justify the speed gained to the correlating upgrade costs.

Summary Statement
This project determines if the cost of converting category 5 cable (running 10 100 switch) to category 6 cable (gigabit switch) correlates to the amount of speed gained when transferring data.

Help Received
Mother helped glue papers to board