## Contents

1 Introduction 2

2 Bibliography 4
1 Introduction

Governments and data centers need to provide correct data almost instantly to allow instant communication and/or vital data to its customers or fellow employees. Our current implementation of Ethernet allows for a decent error recovery, but is limited to speeds of the TCP/IP protocols. As of today, it takes 5 milliseconds (cite) to recover a lost or damaged packet sent over the network. Other solutions such as InfiniBand and fiber optics have a solution that cuts this down from the milliseconds range to the microseconds range which is an order of magnitude faster than Ethernet(cite), but cost XXX times more than Ethernet, which makes it a burden for the target audience to have. This research is important to allow people to have faster connection and error recovery at a lower cost. This solution presented in this paper will lead to three outcomes. First, it will drive further research into making faster cheaper solutions of faster error recover and data transfer. Second, the proposed solution will allow governments and data centers to move to a faster cheaper solution to supply their data. Third and finally, the research that has been done in this area and my contributions will allow for faster connection to all users and companies and will allow better internet solutions that can run on this faster system.

According to current research there is a solution that will decrease error recovery from the current milliseconds to microseconds. The system of UETS (Universal Ethernet Telecommunications Service) with a new switching technique EFR(Ethernet Fabric Routing) will decrease the protocol stack from 5 layers to a 2 layer system. The proposed system will get rid of TCP and IP all together and now we are no longer limited to speeds of these protocols and now are only looking at hardware switching speeds. In addition there will need to be a change in the way switches are made and the way packets are decoded
and checked. Also, this new system can be integrated with the current way of routing by just adding a device on both sides that will transform an incoming packet into the new packet and then back to a regular packet. With end to end TCP/IP in place, this has proven to increase speeds. The lack of the research is the place where my research begins.

With the new system layouts of packet transfer there will need to be a new algorithm that will detect congestion and recover from errors since TCP and IP will no longer be in place, which take care of these problems. Currently to test the new protocol the researchers are using TCP congestion and error recovery algorithms at end nodes. This, I believe, is slowing down the performance of this new system since the packet must be transformed in the old packet type just to make sure there were no errors and to test congestion. I have implemented a new congestion and error recovery algorithms to use the proposed packet structure from end to end and this enables error recovery of the system to go from XXX(time) to XXX(time). It does this by checking for error at each hop and makes sure no hop has a lot of congestion on it.
2 Bibliography

References


