Senior Design Project in Electrical & Computer Engineering

Improving the Performance of CG TCP/IP Applications Over Mobile Satellite Links (Large Cutter)

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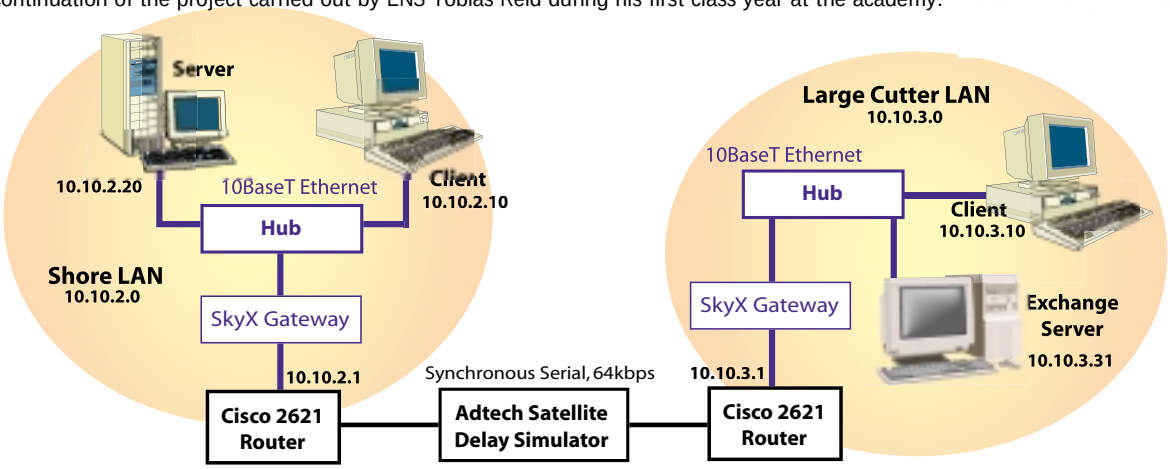
Project Background

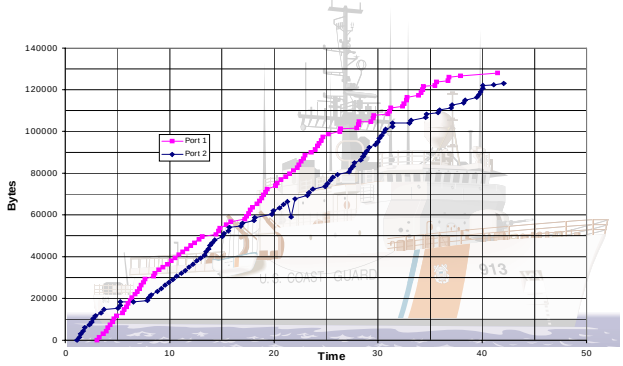
The Coast Guard is transitioning to a Transmission Control Protocol/Internet Protocol (TCP/IP) – basec terrestrial network, termed the Coast Guard Data Network (CGDN+). There is a need to extend this network to support Coast Guard cutters and aircraft. Currently the Telecommunications & Informatior Systems Command (TISCOM) is researching the use of commercial satellite systems to link Coast Guard large cutters to the CGDN+. These links would use the 64 kbps links of the Inmarsat – E Terminal. The USCG Academy is doing research in conjunction with TISCOM to analyze and improve the performance of Coast Guard applications over commercial mobile satellite links. This project is a continuation of the project carried out by ENS Tobias Reid during his first class year at the academy.



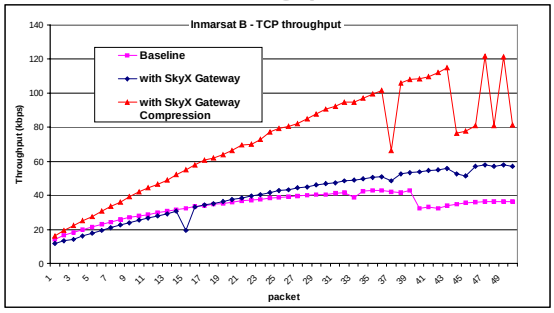
Project Goals

- Model Inmarsat-B system and find optimal parameters for link
- Test SBIR developed software and compare performance to commercial products such as Mentant SkyX Gateway
- Investigate how to set up Microsoft Exchange for connected/disconnected operation.

Web page Transmission Results
for large page without The Mentat SkyX Gateway



Results So Far

We have been able to test web pages and general throughput on the satellite delay simulator. The default TCP/IP parameters appear to work well for HTTP traffic (no unnecessary retransmissions). With the Mentat SkyX Gateways in place we have been able to see about double the general throughput on the satellite link; however, it has not shown any improvement to the speed of web page transmission though.

General Throughput Results