A Software System for Real-Time Sharing of Seismic Data in Educational Environments
Ben Coleman and Joseph Gerencher
Department of Mathematics and Computer Science; Department of Physics and Earth Science; Moravian College

Abstract
The purpose of this project is to facilitate real-time sharing of seismic data between educational institutions at all levels. Most existing software requires changes to the underlying network configuration, and therefore the cooperation of the institution’s computer administrators. Our system works within the bounds of typical computing policies to allow data to be shared in real-time over the Internet. This is particularly well-suited for educational applications.

At the data collection point, the software allows owners of AS-1 seismometers to share their data with others without affecting their local usage. The software reads data off the device and then sends it out across the Internet. At the same time, this data is made available for other programs by placing it on a separate communications port (COM). Thus, data collectors willing to share their data can continue to use their preferred software.

Users interested in viewing streams of data from remote sites utilize a second piece of small software that performs similar operations. Once the data source is specified, the software reads data from the Internet and then makes it available on a COM port. As with the data collector, the user can view the data with any seismic software, and the program will believe the data is coming from a local device. Thus, this software can be utilized in conjunction with a standard program such as AmaSeis by individuals who do not own a seismometer.

Acknowledgement
The students enrolled in the Spring 2008 offering of CSCI 334 System Design were instrumental in the design and prototyping of this system. The students enrolled in this course were Chris Beidelman, Martin Janiček, Jamie Long, Wes Moser, Scott Weaver, and Dustin Zelle.

System Overview

Sender
- The sender client collects data from the seismometer attached to the computer and sends it over the Internet to the streaming server.
- The same data is placed on a virtual COM port on the computer, allowing the user to utilize the data on the local machine.

Receiver
- The receiver client reads data from the streaming server and makes it available on a virtual COM port.
- Software such as AmaSeis reads data off the virtual COM port, making it believe the seismometer is connected directly to the computer.

System Benefits
- All network communication uses port 80, a standard channel of communication on the Internet. Any computer with access to the web can utilize this software without intervention by network administrators.
- The streaming adds a minimal delay to the viewing of remote data. The typical delay between sender and receiver is much less than one second.
- The sender software allows owners of AS-1 seismometers to share their data without affecting their local usage (see details to the right). Likewise, receivers can use any software compatible with the AS-1.

Interested in Becoming a User?
- If you would like to use this system, please contact us. We are eager to share the software.
- This project is under active development, and we are interested to hear ideas on how we can make the software more useful.

coleman@cs.moravian.edu; gerencher@moravian.edu