The BlackBox Data Collection System:

October/November 2013 Project Update

Project Description: ACEP’s BlackBox prototype is a customized data acquisition system built from high quality, off the shelf components for efficient collection of high-resolution, high-quality data in rural Alaska. The goal of the project is to develop a fully self-contained system that can be left in the field unmonitored for extended periods of time.

BlackBox System Specifications: The main components of the system will be four 50 channel terminals to connect measurement equipment, an I/O server to process measurements and a network attached storage (NAS) device for storing data. Each component will be controlled by a programmed relay and powered by 120VAC and 24VDC depending on the component. The programmed relay enables self-monitoring of the system. That is, should a device on the internal network ‘hang-up’ the relay will sense this and reboot the component.

October Progress:

• Construction of the test stand was completed.

• The setup of the NAS device to a RAID10 configuration was finalized.

• Installation and wiring of the BlackBox on the test stand was finished. The system was powered up and all devices are working.

• The web relay was successfully installed and was able to control all other devices based on network activity. All devices are communicating together.

November Progress:

• The I/O server has been configured to store data on the NAS and for data collection.

• The I/O server was set up to transfer data to the network attached storage device as a FTP server (file transfer protocol). Data will come in and be processed through the sampling device and the I/O server and then sent to the NAS device for storage.

• An uninterrupted power supply (UPS) was also connected to the system to reboot the NAS device in the event of a power or signal loss. The UPS is controlled by the web relay and is one of the key steps to designing a system that will function on its own and be able to reboot unresponsive components without user intervention.
Line drawing of BlackBox configuration courtesy of N. Konefal, ACEP/UAF. Additional project photos can be seen at: www.flickr.com/photos/acep_uaf/sets/......Black Box Project.

Project Funding Partners
Shell
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