IDD Community Infrastructure Enhancement at LSU

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Introduction

The Southern Regional Climate Center (SRCC) at Louisiana State University has been a partner with the Unidata Community and acted as an IDD tier-one relay, for more than a decade. We operate a NOAAPort receiving site that is merged with the Unidata IDD feed to provide increased reliability for downstream data feeds and internal uses. We have also been tasked to provide Level II NexRad data and archive 'raw' streams of IDD and NOAAPort data.

In order to support these responsibilities and to meet the need of anticipated increases in data volume, provision of Level II NexRad data, and additional downstream feed sites, we needed to upgrade our IDD computing infrastructure. Direct support for Unidata community activities was not available in operational budgets and the only way to obtain these needed upgrades was through the Unidata Equipment Award program.

An ancillary benefit of this award was the added computing resources made available to support coursework for a Climatological Data Analysis course within the Department of Geography and Anthropology at LSU. The IDD data environment provides an abundance of information that provides students with real-world data that offers added interest to course lectures and assignments.

Purchased Equipment

Two (2) Dell 2850 rack-mounted servers. Specifications: Dual Xeon 2.8GHz processors; Hot plug redundant power supplies; 800Mhz FSB; 4GB DDR2 RAM; (5) 146GB SCSI drives; Dual-channel embedded RAID; Dual 1000MT network adapter

Impact on Coursework Content

The server class computers purchased with the Unidata Equipment Award provide excess processor cycles that are used to provide access to the R language and environment for statistical computing and graphics and to the NCAR Command Language (NCL). Compared to the continuous operation of these servers for IDD data delivery the use of the computers for coursework is minimal and does not degrade IDD system reliability or performance. The availability of these computers and environmental data infrastructure allowed us to redesign a Climatological Data Analysis course from a course that was based primarily on lecture material to one that emphasized classroom presentation of data analysis techniques. Students follow lecture examples through immediate use of on-line data and data analysis tools and are given follow-up assignments that reinforce skills demonstrated in class. This method of instruction has piqued student interest and has increased participation in climate courses by students in related geoscience disciplines.

Increased Use of Unidata Tools and Data

The SRCC uses IDD data as a source of operational data for near real-time monitoring of regional climate. These data are merged with historical data archives obtained from the National Climatic Data Center to provide an uninterrupted time series of in-situ weather and climate observations. This provides a data infrastructure that enables resource managers, environmental planners, and researchers to effectively manage operations and programs that require near real-time climate information.

A unique use of these data was recently highlighted by the establishment of a data feed to the Louisiana Office of Homeland Security and Emergency Preparedness. Fortunately, the equipment obtained through this Unidata Equipment Award was delivered in time to be installed prior to the arrival of hurricanes Katrina and Rita that inflicted severe damage to large areas of southern Louisiana. We used the IDD data to provide event monitoring prior to, during, and following these two events. While we left the forecasting to the NWS and the NHC, we provided concise information in the form of briefings and briefing products, interpretation of official forecast products, and integration of data from sources such as NWS, USGS, NDBC, and local data collection agencies. The use of IDD data and Unidata tools in these support activities was relayed to Unidata program managers and resulted in an article that is posted on the Unidata website at:

http://www.unidata.ucar.edu/community/katrina/katrinasrcc.htm

This article describes the support activities that were made possible using Unidata IDD data and data display tools.

Summary

The equipment award obtained from Unidata has allowed the SRCC to stay current with increasing demands to supply atmospheric environmental data for internal needs, the needs of the Unidata community, and for support of environmental management and emergency support operations. Through the installation of our servers we have documented increased reliability and decreased latency in providing IDD data to downstream sites.