Metropolitan State University of Denver Unidata Grant Synopsis

In the spring of 2014, Metropolitan State University of Denver (MSU-Denver) was awarded an Unidata Equipment Grant of $13,000 for video card upgrades and a new EDEX server that would handle AWIPS-II data. The Principle Investigators of the project were Sam Ng and Chris Kimmett.

The equipment acquired from the grant enabled MSU-Denver to be an early adopter and a leading end-user into utilizing AWIPS-II as part of the classroom curriculum. MSU-Denver has shown with the proper equipment and configurations, AWIPS-II can be used simultaneously on 20+ CAVE clients. In classes, that AWIPS-II has been used, students preferred it over more popular academic-based forecasting programs, such as NMAP and IDV. Once the students got accustomed to the interface of AWIPS-II, they felt more comfortable using the new software, even though some AWIPS_II subprograms and model data were unavailable in the current version of AWIPS-II.

The initial approval of equipment from Undiata was for approximately 15 high-end video cards (2 GB RAM) and a mid-range EDEX server totaling $13.000. After receiving the approval letter, the MSUDenver LAS Dean was able to supply additional funding to combine with the Unidata Equipment grant to enhance the overall proposal (+$5000). With the supplemental fund added, 27 high-end video cards and a high-end EDEX Server were procured. The EDEX server has 32 GB RAM with 1.8 TB of storage along with a 300GB SSD for Radar, GEFS, and 0.25° GFS data storage.

Initially, getting AWIPS-II running without crashing was a challenge. The PIs reconfigured several files to ensure the stability and performance of the program. The files that were adjusted are pqact.conf, request.sh, and wrapper.conf. The first file is associated with the LDM, which made the grib decoder crashed due to some bad tables. The last two files deals with the heap memory issue, which would crash the ingestGrib and qpid process, respectively. After the memory adjustments (doubling the size amount), occasionally crashes would occur, but the PIs have since upped the allotted heap memory size even more. The MSU-Denver EDEX server has not crashed or been restarted for a few weeks now since the final adjustment to the heap memory size.

With the EDEX server running smoothly, 20+ CAVE clients have been open simultaneously without too much loading time. Furthermore, cave clients have been left open for several weeks at a time without crashing as well. AWIPS-2 has been best shown for nowcasting and forecasting only from MSU-Denver experience. Instructors have used AWIPS-II for forecasting cases, such as lake-effect snow event, anticipating the short- to medium-range weather pattern, and mountain waves forecasting.

Also, the PIs have noticed that with the high-end graphic cards, memory-intensive visualization process using IDV has improved dramatically. In the past, IDV would stall or crash while generating memory-intensive process.