Engineering Student Technology Committee

http://www.engr.colostate.edu/ESTC

College of Engineering

Colorado State University

1. Title of Proposal: Student Data Server Storage Upgrade

2. Proposal Participants:

Primary Contact for Proposal

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Department/Major: Atmospheric Science

Check One: _____ **Faculty** _____ **Staff** ___**X**__ **Student**

Additional proposal participants

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Department/Major: Atmospheric Science

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Additional proposal participants

Name: Professor Russ Schumacher E-Mail: russ.schumacher@colostate.edu

Department/Major: Atmospheric Science

Check One: __X___ **Faculty** _____ **Staff** _____ **Student**

3. Proposal Abstract (limit to 100 words):

The Local Data Manager (LDM) in the Department of Atmospheric Science requires more storage space, and we propose to add a large amount of disk storage to better serve the student users. The new storage will house common weather and climate datasets used both in classes and student research. Greater storage capabilities will primarily facilitate student classroom learning while also permitting greater collaboration between students and different research groups with common access to otherwise prohibitively large datasets. This system was originally funded by a combination of an ESTC grant, an outside grant, and the Department back in 2013.

4. Proposal Budget

WD 3TB WD RE SAS 6Gb/s 3.5” Internal Hard Drive	11 x $233.57 = 2569.27

(10 disks plus one disk as a cold spare, as recommended by CJ Keist from ENS)

Dollar or percentage amount requested from ESTC: $2569.27

5. Full description of proposal:

The Atmospheric Science department retrieves real-time weather data via a Local Data Manager (LDM) and stores it locally for use in courses and student-led public weather discussions. The LDM provides observational and forecast data to the recently renovated weather lab, a project spearheaded by students. The weather lab includes 8 high-definition monitors and a high-end PC that delivers content to these monitors; the lab holds public weather discussions on Fridays and is used in synoptic and mesoscale meteorology courses (ATS 640 and 641) taken by all atmospheric science graduate students as well as students from other engineering disciplines.

Upgrading the storage capacity of the LDM will have many benefits for students and the department as a whole, as it will improve the functionality of the weather lab. A major obstacle to students beginning their careers is downloading data from various agencies, which is both time-consuming and, in the case of high-resolution data sets, storage-prohibitive on personal computers (e.g., the North American Regional Reanalysis dataset is 11TB alone). The proposed storage upgrade will aid centralized access to the most commonly used products and give students fast, local-network access to the largest datasets. It is configured such that its data storage can be easily mounted to any desktop machine in the department, and thus used as if it were a "local" hard drive. This enables wider use of real-time and climate data for all students on the department's network, making collaboration simpler and drastically reducing usage barriers of sometimes unwieldy datasets.

Centralized access to common datasets greatly benefits students in the classroom as well. Numerous courses emphasize statistical analysis techniques that are enhanced by the use of real-world data, aiding to blend theory with modeled and observational data actually used in research applications. Two such courses are ATS655: Objective Analysis and ATS780: Meteorological Applications of GPS. With ready access to the real-time datasets that can be read into any number of software packages, and a local server to conduct some of the data processing, lab assignments can be done with dynamic digital datasets instead of static images. In all, this enables more "hands-on" experience and experimentation with different types of data in the classroom, better preparing students for their own research and future careers.

The current system reached its capacity within the past year. An upgrade to the total storage allows for more weather and climate datasets to be stored locally, enhancing students' ability to work with datasets that are otherwise too cumbersome, storage prohibitive, and difficult to download for students. It also cannot be overstated that datasets expand with time, as spatiotemporal resolution increases, necessitating hardware upgrades to stay up with the state-of-the-art. Original capacity of the LDM data server is 41TB and we are asking for an increase in storage capacity of roughly 70%.