Unidata Community Equipment Awards Cover Sheet

Proposal Title: IDD Ingest Relay Replacement in Support of the THREDDS/RAMADDA Server System at Penn State

Institution:
The Pennsylvania State University
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University Park, PA 16802-7000

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Employer ID Number: 24-6000376 **DUNS:** 00-340-3953
Project Period: 8/1/2011 – 7/31/2012
Total Requested Amount: $7,701

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Project Summary:

The Pennsylvania State University (PSU), Department of Meteorology currently ingests, relays and assimilates most of the available Unidata Internet Data Distribution (IDD) data streams. Our IDD relays play a significant role in the distribution of IDD data to the Unidata community providing both reliable and capable service. However, our relays are now over 5 years old and beginning to malfunction. Currently, one the three servers is down for diagnosis/repair with an unidentified fault. If a second server were to fail, our ability to maintain IDD relay operations would be hampered. Thus, we are requesting funds to replace our IDD relays with new and modern equipment so we can maintain our service to the community and provide extended capabilities to handle expected increases in the IDD workload.

In addition, Penn State is noted as a primary disseminator and archive of BUKFIT data. BUFKIT is a forecast profile visualization and analysis tool kit developed by the staff at the National Weather Service (NWS) office in Buffalo and the Warning Decision Training Branch (WDTB) in Norman, OK. Penn State maintains an archive of BUFKIT data that extends back 7 years. We would like to make these data available on our THREDDS/RAMADA server, but the systems are marginally configured with 12 TB of storage. The current BUFKIT archives will occupy over 7 TB and will continue to grow each year. In addition, new sources of BUFKIT data such as SREF are coming online. This does not leave adequate storage for real-time IDD data and other archives we intend to bring online. We would like to expand this capability by adding an additional 12 TB of RAID 10 storage, which will complete the configurable amount for our THREDDS/RAMADA server pair.

Project Description:

The PSU Meteorology Department is a user of Unidata data since program inception and is an IDD participant since 1997. We upgraded our IDD relay service (hosted on idd.meteo.psu.edu) to the Tier-1 level for CONDUIT data in 2010 and currently provide data to 12 external, downstream sites:

aeolus.valpo.edu
wx.gmu.edu
lightning.msrc.sunysb.edu, thunder.msrc.sunysb.edu
cascade.atmos.albany.edu
omega.lsc.vsc.edu
idd.unl.edu
flightrisk.meas.ncsu.edu
shu.cup.edu
vortex.esc.brockport.edu
emo.unidata.ucar.edu
kepler.sca.uqam.ca
coriolis.met.tamu.edu

This relay currently ingests and relays all major IDD data streams. In addition, we have augmented our data service to the community by providing a THREDDS/RAMADDA data community server. This service includes current data and short-term archives for a significant portion of the IDD data stream we currently ingest. We are adding locally generated datasets such as BUFKIT data files and hope to add real-time, experimental forecast model output generated at Penn State. PSU Meteorology's investment in networking and staffing resources can support these proposed endeavors, but our current IDD hardware is reaching its end of life and needs to be replaced, and our storage capacity is limited.

We propose using Unidata Community Equipment Award funds to purchase computer hardware to meet the following three goals:

1. Provide reliable computer resources to serve the IDD data to external users

2. Strengthen our current IDD relay capabilities to meet new and future demands of the Unidata community.

3. Provide a larger backend storage capability for our community THREDDS/RAMADDA service

Proposed Solution / Budget:

We plan to purchase computer hardware to replace our aging LDM relay hardware. We would need to replace the entire trio of servers to ensure failover capability and increased capacity. In addition, hard disks would be purchased to complete the configurable storage on our THREDDS/RAMADA system. The following hardware is proposed:

1) 3 each: Xeon E5504 2.00 GHz quad-core processor, 24 GB memory, 73GB 15krpm disk servers @ $1607 each. Total cost $4,821
2) 12 each: 2 TB SATA disks @ $240 each. Total cost: $2,880

Total project cost: $7,701

Project Milestones:

By end July 2011 – Award in house and ready for implementation

By August 2011 – Acquire hardware, assemble and integrate into existing LDM/IDD and THREDDS/RAMADDA data systems

October 2011 – Integrate years 2 through 7 of BUFKIT archives into the THREDDS / RAMADDA servers

December 2011 – Project Goals Completed

Budget Justification – The Pennsylvania State University

Salaries and Wages: The principal investigator is budgeted at the percentage of time shown using his/her actual salary in the calculation. The principal investigator's time includes both technical and project management functions. Any other individuals/positions shown are technical support with the percentage of time shown and actual salaries used. For project time occurring after June 30 of any given year, the salaries have been adjusted at the University approved rate of 3.0% per year each July 1.

- Charles Pavloski, Principal Investigator – No salary requested
- William Brune, Co-I – No salary requested
- Chris Forest, Co-I – No salary requested
- George Young, Co-I – No salary requested

Fringe Benefits: Fringe benefits are computed using the rates of 30.3% applicable to Category I Salaries, 14.8% applicable to Category II Graduate Assistants, 8.3% applicable to Category III Salaries and Wages and 0.7% applicable to Category IV Student Wages for the current fiscal year July 1, 2010, through June 30, 2011. If this proposal is funded, the rates quoted above shall, at the time of funding, be subject to adjustment for any period subsequent to June 30, 2011, if superseding Government approved rates have been established. The fringe benefit rates are negotiated and approved by the Office of Naval Research, Penn State's cognizant federal agency.

Fabricated Equipment over $5,000: The Unidata Community Equipment Award fund is specifically designed to provide funds for captial equipment to the community in order to enhance the Unidata Internet Data Distribution (IDD) network. The equipment requested in the proposal is specifically designed to replace our IDD relays with new equipment so we can maintain our service and to provide extended capabilities in order handle expected increases in the IDD workload through our new THREDDS/RAMADA service.

Budget / Type:

Internally fabricated, capital equipment cluster of high-availabilty,
linux servers for the IDD LDM relay and THREDDS/RAMADA systems consisting of:

1) 3 each: Xeon E5504 2.00 ghz quad-core processor, 24 GB memory, 73GB 15krpm disk servers @ $1607 each. Total cost $4,821
2) 12 each: 2 TB SATA disks @ $240 each. Total cost: $2,880

Total project cost: $7,701

F&A – On Campus Research: F&A rates are negotiated and approved by the Office of Naval Research, Penn State's cognizant federal agency. Penn State's provisional on-campus rate for research is 47.4% of MTDC from July 1, 2010, until amended. Provisional rates are subject to adjustment when superseding Government approved rates are established.

College of Earth and Mineral Sciences/The Pennsylvania State University
IDD Ingest Relay Replacement in Support of the THREDDS/RAMADDA Server System at Penn State

Unidata Program Center (NSF prime)
Project Dates: 8/1/2011 - 7/31/2012

	8/1/2011 - 7/31/2012	TOTAL
DIRECT COSTS		
Salaries (Category I)		
Charles Pavloski, Principal Investigator	**0**	**0**
No salary requested per soliciation		
William Brune, Co-I	**0**	**0**
No salary requested per soliciation		
Chris Forest, Co-I	**0**	**0**
No salary requested per soliciation		
George Young, Co-I	**0**	**0**
No salary requested per soliciation		
Subtotal	**0**	**0**
Total Salaries and Wages	**0**	**0**
Modified Total Direct Costs	**0**	**0**
Fabricated Equipment over $5000	**7,701**	**7,701**
1) 3 each: Xeon E5504 2.00 ghz quad-core processor, 24 GB memory, 73GB 15krpm disk servers @ $1607 each. Total cost $4,821 2) 12 each: 2 TB SATA disks @ $240 each. Total cost: $2,880 Total project cost: $7,701		
Total Direct Costs	**7,701**	**7,701**
Facilities and Administrative Costs	**0**	**0**
TOTAL REQUESTED FROM SPONSOR	**7,701**	**7,701**