1. Project Short Title

<table>
<thead>
<tr>
<th>5-8 Word Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of a Multi-Processor UNIX Computer System</td>
</tr>
</tbody>
</table>

2. Total Requested Amount (reference to funding for “Years Following” removed)

<table>
<thead>
<tr>
<th>Fiscal Year 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>$30,000</td>
</tr>
</tbody>
</table>

3. Executive Summary

<table>
<thead>
<tr>
<th>Project Description (Three or four sentences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This proposal requests hardware and software maintenance support for a 24 cpu Silicon Graphics computer that is used in several courses in the Computer Science Department. This is a very expensive and specialized machine that would be extremely expensive to replace. The requested maintenance will allow the department to continue using the machine in a reliable fashion.</td>
</tr>
</tbody>
</table>

4. Project Description

This proposal requests hardware and software maintenance support for a 24 cpu Silicon Graphics computer that is used in several courses in the Computer Science Department. This machine (hydra.cs.gsu.edu) is a Silicon Graphics computer that has 24cpus, 200GBytes of disk storage, 4GBytes of main memory, and a CRAY link (high bandwidth interconnect) with hypercube topology. This machine (Hydra), plus a later upgrade cost $308,000. While the machine is now three years old, it is not the type of equipment that is replaced every three years, since replacing it would be about $300,000. This computer still functions quite well for its original instructional purpose and can continue to be used for several years.

A problem with this type of computer system is the hardware and software maintenance. Without a hardware maintenance contract, any breakdown can be extremely expensive as computer boards can cost several thousand dollars plus very expensive labor costs. Since it is used in CSc classes, it must be continuously functional during the semester since if it is down all of classes will be severely affected. Software
maintenance is necessary to get upgrades to the system software, including maintenance patches and upgrades. This is necessary to ensure the smooth and continuous functioning of the machine.

The requested amount is $30,000, which covers the maintenance contract costs. The Computer Science Department employs a fulltime system administrator who oversees the machine.

5. Relevance to Regents Guidelines

This project directly supports Guidelines [1] (Technology fee revenues should be used primarily for the direct benefit of students to assist them in meeting the educational objectives of their academic programs.) and [3] (Technology fee revenues should be used for hardware and Network related expenditures that include support of general purpose or special purpose laboratories used by students for body productivity and more discipline related activities.)

6. Relevance to Strategic Plan(s)

A major strategic goal of the University, College, and Department is to provide a high quality undergraduate education. For the Computer Science department, this means that our students must have access to the proper equipment so that their education will be competitive with other top-level schools and. Having a system such as Hydra allows us to be competitive.

7. Impact on Students Served

Provide a paragraph describing the number and types of students served or special audiences served. If appropriate, identify the number of hours in which the facility will be accessible to students, any restrictions regarding access, any special staff services that will be made available, or any specialized hardware or software that will be made available.

The primary courses using Hydra teach parallel and distributed computing and cannot use any other computer on campus. The Computer Science department has over 900 undergraduate majors and over 100 graduate students (Ph.D. and M.S.). A large portion of these students will eventually take a course that uses Hydra. Other courses also use Hydra. It is extremely important for computer science students to understand the basic concepts of parallel and distributed computing since multi-processor machines like this are becoming increasingly common in scientific and engineering industry research, where many CS students find jobs. In fact, some of courses on Hydra not only are in CS degree programs but also are designated by the department in consultation with Yamacraw Education as Yamacraw specialty courses because of the specialized computing environment and capabilities. Students who take two or more Yamacraw specialty courses earn a Certificate from the Yamacraw Design Center, which can be a strong help when applying for high-tech jobs in Georgia. An average of between 100-150 students per semester take courses using Hydra. Since it is a UNIX system
accessible via the Internet, it is accessible 24 hours per day, seven days per week.

8. Justification of Funding Requirements for Fiscal Year 2003

Provide a specific description of the funding requirements in FY2003. Itemize and total the following categories of expense. If necessary, add lines to the table below corresponding to accounting objects of expense:

PLEASE NOTE THAT ANY EQUIPMENT ITEMS LESS THAN $1000 SHOULD BE CATEGORIZED AS “SUPPLIES”.

<table>
<thead>
<tr>
<th>Object of Expense</th>
<th>Itemized Descriptions</th>
<th>Quantity</th>
<th>Extended $ Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Salaries</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Salaries</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment (Note: Use standard dollar amounts and replacement thresholds from sections 10/11, or provide explanation in sections 10/11)</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance or Contractual Services</td>
<td>Hardware and software maintenance contracts with SGI</td>
<td></td>
<td>$ 30,000</td>
</tr>
<tr>
<td>Supplies</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Services (Requires review of Planning &amp; Facilities)</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Connections and Infrastructure Costs (Requires review of UCCS)</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Expenses (explain)</td>
<td>Item 1, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
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</table>

9. Consequences of Partial Funding

State what the consequences would be on the effectiveness and viability of the proposal if it were only funded in FY 2003 at the following percentages of the requested total:

Like most departments, Computer Science has a very limited operational budget. If the project were funded at the 75% level, the department might be able to afford the maintenance contracts. The department cannot afford the contracts if the proposal were funded at the 50% level.

10. Standard Dollar Amounts
In constructing the budgetary requests in step 8 above, computer workstations should be budgeted at the following levels:

- Windows/Intel processors workstation, including monitor: $1,800
- Apple Macintosh models: $3,170

Requests departing from the above standard amounts require documentation of the specific programmatic need that requires departure from this standard. (See Attachment 2: Standard Windows/Intel instructional workstation.) Please explain any requested departures below:

Not applicable since this is not a throwaway machine but one that can continue to be used for several years. Replacement costs are about $300,000.

11. Standard Replacement Thresholds

All equipment being requested due to obsolescence or inadequacy of existing equipment must be itemized on the form provided in Attachment 3: Itemization of Equipment to be Replaced. Each item for which replacement funding is being requested will be in one of the following two categories:

Not applicable.

12. Prerequisite, Non-Technology Fee, Funding

None

13. Matching Funds

None

14. Staffing and Other Support Availability

The department pays for a full time system administrator (Schaochieh Ou) who oversees the machine. Martin D. Fraser is his supervisor.

15. Space Availability

Hydra is housed in the computer center in Library South and will remain there.

16. Impact on Facilities

None.

17. Impact on Computing/Network Infrastructure

None.

18. Post-Project Assessment Criteria

Hydra will remain up and running for instructional purposes.
19. Review and Acknowledgements

Attach electronic notes or documentation showing that the following units or administrators have reviewed or acknowledged this proposal:
Dean or functional unit endorsement
Matching funds commitment from appropriate fiscal officer
CBSAC approval, if necessary
University Computing and Communications Services review or acknowledgement, if necessary
Planning and Facilities review or acknowledgement, if necessary
To Whom It May Concern

The Department of Biology supports the technology fee proposal, titled “Maintenance of a Multi-Processor UNIX Computer System,” being submitted by the Department of Computer Science to fund maintenance contracts on the 24-processor Origin 2000 high-performance computer (named Hydra).

Bioinformatics is an important new field in which both departments collaborate. Instruction in the compute-intensive field of bioinformatics would be greatly enhanced by Hydra’s specialized computing environment and capabilities. Maintenance contracts will greatly reduce the risk of significant interruption of courses on Hydra, occurring because of hardware or systems software failures, and strongly compel the use of Hydra in such instruction. Training graduate biology students in courses using this advanced state-of-the-art equipment adds important and relevant computing experience that will be a significant assistance to them when seeking jobs or further graduate education opportunities.

I support the Computer Science proposal and recommend its 100% funding.

Sincerely,

Phang C. Tai, Regents’ Professor and Chair
Department of Biology
Georgia State University
24 Peachtree Center Avenue
402 Kell Hall
Atlanta, GA 30303

/c1

Department of Chemistry

February 20, 2002
Memo to: Dr. Martin Fraser, Chair
Department of Computer Sciences

From: Dr. A.L. Baumstark, Chemistry Chair
Department of Chemistry

Subject: Support for Technology Fee Proposal

The Department of Chemistry strongly supports and endorses the technology fee proposal, titled “Maintenance of a Multi-Processor UNIX Computer System,” being submitted by the Department of Computer Science to fund maintenance contracts on the 24-processor Origin 2000 high-performance computer (named Hydra). Our students use the system for projects related to their advanced courses and research. Difficulties with maintenance funding cause difficulties and loss of computation time. It is vital that the system be maintained at maximum performance levels.

Bioinformatics is an important new field in which both departments collaborate. Instruction in the compute-intensive field of bioinformatics would be greatly enhanced by Hydra’s specialized computing environment and capabilities. Maintenance contracts will greatly reduce the risk of significant interruption of courses on Hydra, occurring because of hardware or systems software failures, and strongly compel the use of Hydra in such instruction. Training graduate chemistry students in courses using this advanced machine adds important and relevant computing experience that will be a significant assistance to them when seeking jobs or further graduate education opportunities.

I support the Computer Science proposal and recommend its 100% funding.

Sincerely,

A.L. Baumstark, Chair
Department of Chemistry