



Office of the Vice Chancellor for Information Technology & Chief Information Officer  
Office of the Vice Chancellor for Research & Economic Development

April 4, 2011

TO: Michael V. Martin, Chancellor  
Through John Maxwell Hamilton, Provost & Executive Vice Chancellor

FROM: Brian D. Voss, Vice Chancellor  
Thomas R. Klei, Interim Vice Chancellor

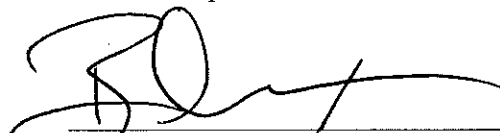
SUBJECT: High Performance Computing at LSU – Structural Changes and Funding Alignment

Chancellor Martin, Provost Hamilton:

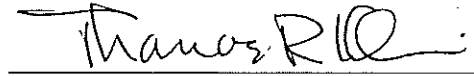
Over the past decade in particular, LSU has established itself as a leader in a number of fields of research that push the forefronts of high performance computing (HPC) and/or that rely on a solid HPC infrastructure to investigate complex problems. Through a close collaboration, CCT and ITS have led and facilitated LSU's development of facilities and expertise in the HPC arena that are among the best in the country as provided by a university. This leadership also has made it possible for the Louisiana Board of Regents to pursue the *Louisiana Optical Network Initiative* (LONI), which provides advanced optical networking and HPC capabilities to the higher education community statewide; LSU also supports this endeavor through effective leveraging of our own environment.

As an increasing number of academic disciplines rely more heavily on a modern cyberinfrastructure (CI) to facilitate collaboration and discovery, universities across the country are faced with the challenge of providing students and faculty with sustained access to HPC resources. By formalizing the existing collaboration between ITS and CCT – and, in particular, by identifying and permanently committing existing funds from the separate budgets of ITS and CCT to address the long-term CI needs of the campus – LSU will be uniquely positioned to meet this challenge, sustain our position in CI deployment, and do so within the tight budget constraints that presently face the University. The accompanying documents detail how this will be accomplished.


This memorandum serves to seek your approval to codify changes in the structure and alignment of existing funding for provision and support of HPC at LSU. Signatures below indicate acceptance and approval of the changes and information provided in this memo.

  
\_\_\_\_\_  
Brian D. Voss, Vice Chancellor  
Information Technology & CIO


4 Apr 2011  
(date)

  
\_\_\_\_\_  
Thomas R. Klei, Interim Vice Chancellor  
Research & Economic Development

4-4-11  
(date)

  
\_\_\_\_\_  
John Maxwell Hamilton, Provost & Executive Vice Chancellor

4/12/11  
(date)

  
\_\_\_\_\_  
Michael V. Martin, Chancellor

4-12-11  
(date)

CC: Eric N. Monday, Vice Chancellor, Finance & Administration; Joel E. Tohline, Director - CCT

Attachments: April 2011 High Performance Computing at LSU – Structural and Funding Alignment  
BDV/JET 1 April 2011

**High Performance Computing at LSU – Structural and Funding Alignment**  
April 2011

Following collaborative and intensive review and analysis by Information Technology Services (ITS) and the LSU Center for Computation & Technology (CCT) leadership, the following is established:

1. **Implement New HPC Structure:** LSU will establish a new structure for HPC operations, systems administration, and support of the use of this critical asset enabling the advance of research in the institution. This will entail:
  - a. Establishing a new organization module and budgetary account for fundamental HPC operations, systems, and “tier-1” level support services, referred to as HPC-1@LSU. This organization will be funded by permanent base-budget transfers of:
    - i. Approximately \$624,000 in annual funding currently in the CCT budget
    - ii. Approximately \$316,000 in annual funding currently in the ITS budget
    - iii. Approximately \$339,000 in annual funding currently provided to LSU via the Louisiana Optical Network Initiative (LONI) contract with the Louisiana Board of Regents, via the LONI Management Council
    - iv. Personnel/staff lines supported by this funding; 13 total FTE in all (current staff and vacancies)
  - b. Establishing a new focus area providing “tier-2” level consultation and advising to the campus/institution research community, enabling the broader adoption and use of HPC and other forms of CI – on campus, regionally, and as part of national CI fabric – by that community. This organization will be funded within the current CCT budget at approximately \$422,000 annually, and accounts for about 8 FTE.
2. **Define Responsibilities:** Responsibility for HPC-1@LSU will be placed within the portfolio of the Office of the Vice Chancellor for IT & CIO, specifically within the ITS organization where it will be aligned with current functions serving faculty adoption and use of IT in teaching and learning, and general IT support needs across campus. Responsibility for HPC-2@LSU will reside as an enhanced function within the CCT, where it will be aligned with other, broader, research-enabling functions of the Center. Responsibility for support of LONI HPC operations and support functions will be encompassed within the HPC-1@LSU role as a part of ITS.
3. **Refresh of the Current HPC Environment:** HPC-1@LSU with input, direction, and close involvement of HPC-2@LSU will complete a process of performing a refresh of LSU’s critical HPC assets (computation and commensurate storage resources). It is estimated that this refresh will require approximately \$2.8-million in one-time funding, to be provided as follows with support of the Vice Chancellor for Finance & Administration:
  - a. \$1-million in currently available funds from the CCT
  - b. \$250,000 in currently available funds from OVCIT/ITS
  - c. Approximately \$500,000 in identified funding from the CCT for FY2011-12, FY2012-13, and FY2013-14 as a cash-flow/leverage for a FY2011-12 investment of approximately \$1.5-million
  - d. Additional ‘to be identified’ amounts of one-time, ad-hoc funds from CCT, ITS, or grant-source investments in FY2011-12 to complete the necessary funding picture in support of the proposed acquisition and in light of final costs determined in the next 2-4 months as the procurement process unfolds.
4. **Establish Life-cycle Replacement Funding:** The CCT will set-aside within its annual budget the amount of at least \$500,000 to support ongoing capital, life-cycle replacement of the aforementioned critical HPC resources for LSU. This funding level will be sufficient to refresh the environment, as described in item #3, for the period through the end of FY 2013-14. The Office of the Vice Chancellor for Research & Economic Development (VCRED) will retain control of the annual commitment of this funding, including beyond FY2013-14.
  - a. Going forward, it is clear that \$500,000 annually is not sufficient to sustain the HPC environment as it is foreseen to be required for the coming years. Estimates suggest that at least \$1-million in annual investment (even if leveraged as a payment stream supporting periodic large, one-time capital outlays) is a more likely amount to sustain the LSU HPC environment.
  - b. Given this, it remains a challenge to be addressed in the coming years – but certainly before FY2014-15 – by the Institution in the broadest sense. It will be incumbent upon the VCIT and VCRED to continue to work to build this ‘replacement’ fund through whatever means are available. This challenge does not need to be addressed now – but the identification of this future challenge is a part of the recommendations made now, and should be annually reviewed in forthcoming budgetary cycles.

5. **Provide Governance:** Governance mechanisms will be addressed going forward and will be done within the construct of the existing *IT Governance* structure put into place in 2010 (<http://itsweb.lsu.edu/VCIT/Governance/item2570.html>), with the involvement and support of the LSU Faculty Senate (Resolution 10-08). The exact governance mechanisms will accommodate the unique role that the CCT plays in the provision of cyberinfrastructure, including HPC, and the CCT will be closely involved in the establishment of HPC-specific advisory bodies within the IT Governance structure (specifically, the Research Council).
6. **Implementation Timetable:** The organizational aspects related to HPC-1 and HPC-2 will be implemented on or about 1 May 2011 in a manner sensitive to both the impacted staff and the campus community of HPC users. The budgetary aspects related to HPC-1 will be implemented effective 1 July 2011 aligned with the start of the new fiscal year. Financial aspects related to the 'refresh' acquisition of HPC resources detailed in item #3 will be handled at the discretion of the VC for Finance & Administration (VC Monday), and in a timeframe governed by LSU and State procurement processes.

This document is supported by several attachments, including:

- February 22, 2011 memo from VC Brian Voss (and Joel Tohline, CCT Director ) to VC Klei and VP Cassidy
- Financial Details spreadsheets attached to the February 22, 2011 memo
- Graphic providing pictorial representation of the HPC Organization, HPC-1 Organization (within ITS), IT Governance Recommendation, and LONI Integration

*Attachments: Feb-22-2011 Memo & Attachments, HPC@LSU .ppt graphics  
BDV/JET 1 April 2011*