

Project Closeout



Project Details

Project Name: OneIT – HPC
Project Team Leads: Ben Rogers & Sai Ramadugu
Project Manager: Kris Halter

Project Overview (What were the goals)

< Provide a brief summary of what the project was. Include the project goals, and objectives. >

Investigate opportunities for shared staffing in High Performance Computing systems management across campus to improve effectiveness and decrease cost. This will include the development of new services for managing high-performance computing systems and may also include improvements to the existing central cluster model. Staff will continue to encourage the use of the standardized central cluster systems where possible. Where not possible, encourage the use of standardized management practices when feasible.

Project Accomplishments (What was accomplished)

< Provide a brief summary of what the project accomplishments were. >

Implementation of a new High Performance Computing cluster, Argon, on campus that replaced the aging Helium HPC cluster. This system deployment, along with approximately \$110k in matching funding from OneIT and collaboration with the data center consolidation team, has successfully and significantly decreased the number of independent clusters. No new resources were allocated to the project beyond the \$110k in capital funding so not all original outcomes were achieved.

Savings fall into the following categories:

Consolidation of Small Clusters into Argon – February 2017

Consolidated HPC systems from Chemistry (75), Biochemistry (22), Biology (17), Psychology (10), Physics and Astronomy (33), IATL (31) into the new Argon HPC. This has reduced the number of servers on campus by 113.

\$68,273 yearly savings from Electrical savings by combining these systems into Argon was realized.

MEP savings of \$141,786 a year was obtained by combining these systems into Argon.

Faculty, staff, and grad student time was also saved but this is not easily quantified and no actual positions were reduced.

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Total estimated savings in this area of \$220k-\$250k/year. Note that these cost savings are counted in the data center consolidation totals so cannot be counted directly in the OneIT Small HPC project.

Efficiency Achieved in Retirement of the Helium HPC System – December 2016

The six year old, 16 cabinet, Helium system was successfully retired with only one compute server out of 400 returning to campus and living on. This system was replaced by the Argon system which provides an estimated 75%+ increase in system performance while occupying only 8 cabinets and decreasing power utilization by approximately 25%. Data center space has been reused so there are no savings in terms of data center MEP costs but if the projected 50% decrease in power/cooling costs is realized then the system will save on the order of 50KW of continuous power draw. Annually this is savings of approximately \$41k/year when assuming a power cost of \$0.0939 per kilowatt hour.

Position Savings - April 2015

Research Services HPC group backfilled a Sr. Systems Administrator position at the Systems Administrator level. Savings are due to salary differential. Total savings of \$23,750/year assuming a P&S fringe rate of 35.7%.

User Account Creation Process Improvement- June 2015

Research Services has recently streamlined the HPC account creation process and is now using Universal Workflow. We are anticipating staff time savings of approximately 20 hours/year that can be repurposed to more productive work. Using an estimated staff rate of \$65/hour this is a savings of \$1300/year.

Cross Training & Collaboration

Greater collaboration between ITS Research Services and various research PIs and departments was developed over the course consolidations. This has allowed for more open conversations and dialogues between departments, sharing of knowledge and best practices, and reduction in overhead of resources. In addition ITS Research Services has worked with CLAS to do additional cross training and to work together on knowledge sharing of how systems are being run.

Total Estimated Savings Attributable to Project - \$66,178/year

Total Estimated Savings of HPC Activities - \$280k-\$310k/year

What Could Have Been Improved (What would you have done different)

< Provide a brief summary of the activities, procedures, and policies that could have been improved throughout the project.>

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A process for handling movement of personnel staffing lines to new departments could have been implemented before the project started to ease the process of transitioning management of HPCs on campus.

Defined process for determining how/if resources would be allocated to the project. The allocation of capital resources was key in the success of the project areas that were successful. A lack of staff funding prevented the original vision of having a group that would do management of smaller clusters from being realized.

Recommendations for Further Action (What tasks are still left to do)

< Provide a summary of recommendations for further action regarding the project (for example, additional exploration, follow-up project, revisit project in future, etc.).>

None

Recommendations for Process Improvement (What can be done better on future projects)

< Provide a summary of recommendations that can be used on future projects.>

None

<input type="checkbox"/>	Project Closeout Approval Date	MM/DD/YY
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