



Memorandum

Date: October 25, 2016

To: The University of Oregon Research Community

From: David Conover, Vice President for Research and Innovation

RE: Establishment of a new High Performance Computing Research Core Facility

I am pleased to announce the launch of a new High Performance Computing Research Core Facility (HPC_RCF) at the University of Oregon. As with all other core facilities administered through my office (see <http://rcf.uoregon.edu>), the goal of the HPC_RCF is to support and enhance the research activities of all UO scholars. The establishment of the HPC_RCF fulfills President Schill's vision of increasing the computational resources to support research excellence at UO, supported with central strategic investment funds to plan and purchase a new high performance computing system. The new HPC_RCF will be a foundational resource for existing researchers and members of the new Knight Campus for Accelerating Scientific Impact (KCASI) at UO, and will serve as key mechanism for collaboration outside UO.

A committee of key faculty and staff worked quickly in academic year 2015-16 to create the HPC_RCF vision. Chaired by Joe Sventek (Head of CIS), the committee ran an expedited and competitive process within the existing state pricing agreement among the most prominent HPC vendors, including HP, Dell, Cray, and IBM. The machine specifications were carefully designed to serve existing researchers' needs, but also be able to grow to meet future internal and external needs. Dell was the successful vendor.

After a nationwide search, I am also pleased to announce that Charles (Nick) Maggio will be joining the University in December as our new HPC_RCF Director. Robert Yelle will continue to serve faculty with ACISS maintenance while joining the HPC_RCF team. The Faculty Advisory Committee has been formalized and comprises representation from across UO, and will be chaired by Joe Sventek. As faculty leaders, I appreciate their willingness to guide and represent the scientific needs of the users across academic units to ensure it enables and facilitates the scientific goals and research needs of its users.

OFFICE OF THE VICE PRESIDENT FOR RESEARCH AND INNOVATION

1266 University of Oregon, Eugene OR 97403-1266

T (541) 346-2090 F (541) 346-2023 <http://uoresearch.uoregon.edu>

Joe Sventek and Nick Maggio will provide back-to-back presentations at 4p.m. on Friday, October 28th in the EMU Redwood Auditorium to provide more information about the HPC_RCF. Joe will describe the creation of the HPC_RCF and key machine specifications, and Nick will present his vision for how this HPC core facility will empower researchers from across all disciplines at the University of Oregon. The talks will be followed by a short reception. We also plan to hold a meeting and two drop in sessions in December to provide more details about HPC_RCF use, including established accounts and transitioning from the existing ACISS machine into the new HPC_RCF over the coming year. Please watch for those meetings and the schedule for the drop in sessions. In the meantime, the service agreement for ACISS was extended to ensure service during this transition.

The attachment to this document will show you a list of components as we work to have the new <https://hpcf.uoregon.edu/> website ready to have information available for grant submissions and lab planning soon. The solution was designed for computing nodes and parallel storage only. Archival storage remains important to discuss with this community of campus users and we hope to discuss it more closely in the FY16-17 academic year.

High Performance Computing Research Core Facility creation committee

HPC 2.0 Committee:

Joe Sventek - CIS; Chair of the committee
Chris Bone - Geography Department; GIS, spatial analysis and modeling
Hank Childs - CIS; Visualization and high performance computing
Allen Malony - CIS; High performance computing
John Postlethwait - Biology; Genomics, evolutionary developmental biology
Eric Corwin - Physics; High performance microscopy in 4 dimensions
Doug Toomey - Geology Department; Geophysics, tectonics and remote sensing
Bill Cresko - AVPR; Next generation sequencing genetics and genomics (ex officio)
Micah Sardell - Central IS (technical staff)
Garron Hale - CASIT (technical staff)
Stacy Williams-Wright (business staff & project manager)

Background:

High Performance Computing (HPC) has become a critical resource for all research universities including the University of Oregon. Led by Allen Malony and a team of collaborating faculty, the acquisition in 2009 of NSF funding for the ACISS supercomputer was a key advance for research at UO. ACISS allowed access to new grant opportunities and expansion of research programs, the competitive hiring of new faculty, and the expansion of educational opportunities. The ACISS system is at the end of its useful life. A new HPC (2.0) resource with a robust and sustainable support framework is required to serve existing users, expand research and educational opportunities, and help recruit new faculty and students. President Schill and Provost Coltrane, in consultation with Interim VPRI Shelton and CAS Dean Marcus, have agreed that creating the HPC 2.0 resource is of critical importance for the President's number one priority, which is to improve research and academic quality at UO. Considerable general fund dollars have been allocated to this effort fully create the new resource. Up to \$3M is earmarked for the initial hardware purchase. In addition, approximately \$920K per year will be allocated to recurring costs such as personnel, software, and annual hardware replacement. The Allen Hall Data Center has been identified as an appropriate home for the HPC 2.0 hardware.

Specifications for the system:

Rack, Stack, Labeling and Cabling of an HPC cluster of the following hardware:

- a) Two (2) Dell PowerEdge R630 Head nodes with High Availability (HA)
- b) Two (2) Dell PowerEdge R630 Login nodes
- c) Twenty seven (27) Dell PowerEdge C6300 chassis comprised of:
 - o One hundred and eight (108) Dell PowerEdge C6320 Basic Compute Nodes
- d) Twenty seven (27) Dell PowerEdge R730 Accelerator Compute Nodes
- e) Nine (9) Dell PowerEdge R930 Fat Nodes
- f) Three (3) Mellanox MSB7700-ES2F Infiniband switches
- g) Seven (7) Mellanox MSB7790-ES2F Infiniband switches
- h) Four (4) Dell Force10 S4048 Ethernet switches
- i) One (1) Dell Force10 S3048 Ethernet switches
- j) Up to two hundred (200) Ethernet cables
- k) Up to one hundred and seventy (170) Infiniband cables

Installation and configuration of Bright Cluster Manager to deploy RedHat Enterprise Linux onto the cluster.