University of Montana Transforms Broken, Inefficient Research Cluster to a Useful, Trustworthy Cluster with Expert Guidance from CIQ

CASE STUDY

University of Montana (UM) has a top-tier Carnegie classification of R1 (Very High Research Activity). The university conducts research and drives academic excellence in wide-ranging areas of inquiry, including biomedical sciences, health professions, humanities and sciences, education, forestry, business administration, journalism, law, visual and performing arts, and applied arts, sciences, and computing/engineering technology. UM delivers exemplary research and professional training with an international and interdisciplinary emphasis. Based in Missoula, UM is home to top-notch researchers and educators, as well as about 10,000 students from around the globe, of which over 2,500 are enrolled in graduate and professional programs.

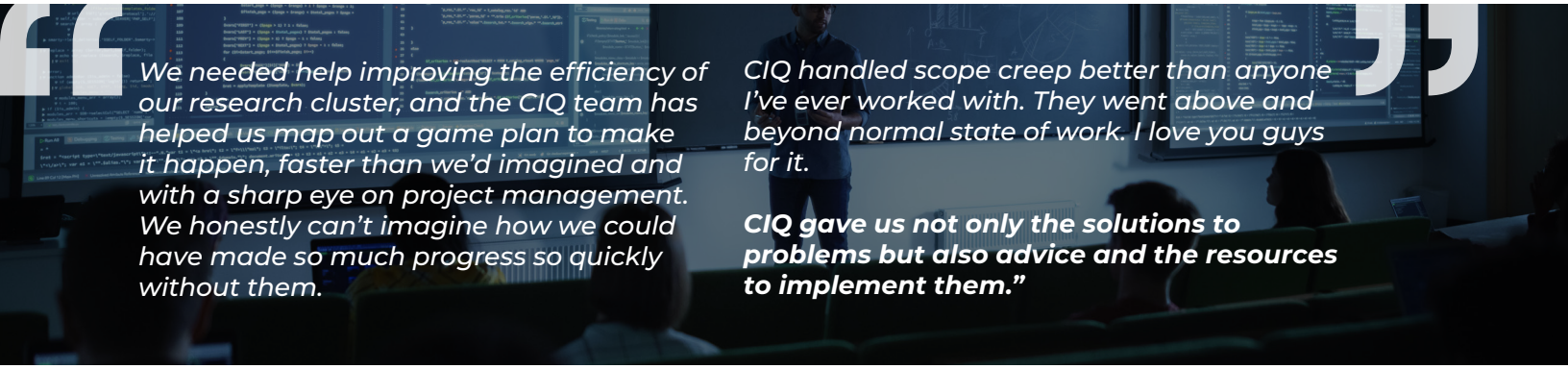
Challenge

UM had an old operating system based on CentOS that had not been maintained. Nodes were constantly failing without anyone knowing, there was no monitoring, nothing was set up correctly, and the 100 users on the cluster began to dwindle due to the poor performance. Tired of running jobs that drained cluster resources, people stopped using it and set up their own servers. It wasn't until professionals came from other Universities operating functional clusters that the UM team learned that it could improve operational performance. It was time for a centralized, top of the line cluster. The team adopted a mission to train faculty and staff to use and manage this resource, but the salary for a System Administrator in research computing in Missoula couldn't compete with other higher education institutions. It was decided that research computing would be outsourced. UM reached the rank of an R1 institution, and their goal is to have their research computing enterprise reflect that prestigious status. In order to do that, trust needed to be reestablished with the faculty so they would feel confident in using this new centralized resource.

Solution

Through UM's involvement with the Rocky Mountain Advanced Computing Consortium (RMACC) they were introduced to CIQ, which understood the University's need to rebuild the cluster, develop the workforce, and train the researchers. UM entered into a multi-year agreement with CIQ to rebuild its cluster and get it fully functioning. The first year will be dedicated to getting the new cluster off the ground and running smoothly. CIQ is training the existing staff to maintain the new system and manage the day-to-day operations, as well as training the faculty on how to use the technology. In years two and three, the CIQ Fuzzball product will be used to move UM research computing capabilities to the edge.

CIQ met with the everyday users of the cluster as well as the research faculty and the co-Principal Investigators (PIs) to hear and understand their high-level problems such as reliability, monitoring, and management. A technical summary was delivered that outlined exactly what was needed, how to get there, and the timeline on which to do so. A subsequent implementation plan explained the options for setting up the cluster and for storage.



We needed help improving the efficiency of our research cluster, and the CIQ team has helped us map out a game plan to make it happen, faster than we'd imagined and with a sharp eye on project management. We honestly can't imagine how we could have made so much progress so quickly without them.

CIQ handled scope creep better than anyone I've ever worked with. They went above and beyond normal state of work. I love you guys for it.

CIQ gave us not only the solutions to problems but also advice and the resources to implement them."

Zach Rossmuller *CIO* · **University of Montana**

Results

UM's new cluster is successfully running, and storage for the 800TB of data is being allocated. Faculty trust will be a key measure of success, and that will take time. But Zach sees the relationship with CIQ extending beyond the initial three-year engagement so the University can move to more advanced aspects of research computing. There are plans to record training webinars for future staff as the department grows. There's even talk of hosting a research computing conference at the end of the year that includes workshop labs with members of CIQ.