

Programmable Education Infrastructure: Cloud resources as HPC Education Environments

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ABSTRACT

Cloud computing is growing area for educating students and performing meaningful scientific research. The challenge for many educators and researchers is knowing how to use some of the unique aspects of computing in the cloud. One key feature is true elastic computing - resources on demand. The elasticity and programmability of cloud resources make them an excellent tool for educators who require access to a wide range of computing environments. In the field of HPC education, such environments are an absolute necessity, and getting access to them can create a large burden on the educators above and beyond designing content.

While cloud resources won't replace traditional HPC environments for large research projects, they are an excellent option for providing both user and administrator education on HPC environments. The highly configurable nature of cloud environments allows educators to tailor the educational resource to the needs of their attendees, and provide a wide range of hands-on experiences. In this demo, we'll show how the Jetstream cloud environment can be used to provide training for both new HPC administrators and users, by showing a ground-up build of a simple HPC system. While this approach uses the Jetstream cloud, it is generalizable across any cloud provider. We will show how this allows an educator to tackle everything from basic command-line concepts and scheduler use to advanced cluster-management concepts such as elasticity and management of scientific software.

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