

Enabling research network connectivity to clouds with a virtual router

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The use of opportunistic cloud resources by HEP experiments has significantly increased over the past few years. Clouds that are owned or managed by the HEP community are connected to the LHCONE network or the research network with global access to HEP computing resources. Private clouds, such as those supported by non-HEP research funds are generally connected to the international research network; however, commercial clouds are either not connected to the research network or only connect to research sites within their national boundaries. Since research network connectivity is a requirement for HEP applications, we need to find a solution that provides a high-speed connection. We are studying a solution with a virtual router that will address the use case when a commercial cloud has research network connectivity in a limited region. In this situation, we host a virtual router in our HEP site and require that all traffic from the commercial site transit through the virtual router. Although this may increase the network path and also the load on the HEP site, it is a workable solution that would enable the use of the remote cloud for low I/O applications. We are exploring some simple open-source solutions but expect that an SDN solution will be required to meet the bandwidth requirements. In this paper, we present the results of our studies and how it will benefit our use of private and public clouds for HEP computing.

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Secondary Keyword (Optional)

Cloud technologies

Primary Keyword (Mandatory)

Network systems and solutions

Primary author: SEUSTER, Rolf (University of Victoria (CA))

Co-authors: LEAVETT-BROWN, Colin Roy (University of Victoria (CA)); CASTEELS, Kevin (University of Victoria); PATERSON, Michael (U); SOBIE, Randy (University of Victoria (CA))

Presenter: SEUSTER, Rolf (University of Victoria (CA))

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