

Abstract

OpenStack Adoption at CHPC: Advancing AFIS and Emerging DevOps Projects Through Scalable Cloud Solutions

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OpenStack is a cloud computing platform utilized by the Centre for High Performance Computing (CHPC) to manage a wide range of software services. Its user-friendly interface enables the creation, scaling, and management of virtual machines with minimal effort, offering a flexible and scalable Infrastructure as a Service (IaaS) solution. The Advanced Fire Information System (AFIS), is a satellite-based tool that delivers near real-time fire information to users globally. AFIS is an internationally acclaimed Software as a Service (SaaS) which is traditionally hosted on self-managed infrastructure. AFIS's backend and frontend systems are being transitioned to CHPC's OpenStack environment. This migration has been successful, with several AFIS subsystems deployed without performance issues. The shift to OpenStack provides significant advantages, such as mitigating the risks associated with infrastructure failure and reducing the need for manual intervention in server management. Costs associated with server maintenance and infrastructure are significantly saved on. Minimal modifications were required for the AFIS subsystems software deployment. Looking ahead, OpenStack presents a promising solution for migrating other current projects, including community safety project backends and geocoding engines and emerging DevOps applications such as the TB, E-Coli and HPV projects. Lastly, the integration of OpenStack has facilitated enhanced collaboration with other CSIR groups, CHPC, SANReN, and DIRISA.

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