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## CYBERA

# CANARIE Leverages the OpenStack® Cloud to Accelerate Innovation

## Non-profit IT services provider uses Rackspace® Cloud Builders to help Canadian small and mid-sized businesses drive innovations on the cloud.

CANARIE, Canada's Advanced Research and Innovation Network, is rapidly embracing cloud computing. And for this national network, it's a natural next step. CANARIE has long provided a dedicated network of high-speed, fiber optic cable that stretches 19,000 km to enable researchers and innovators to collaborate throughout Canada and around the world. Universities, colleges, hospitals, private and public sector research labs, and schools across the country depend on its network. In total, more than 40,000 scientists, researchers, and educators at more than 1,100 institutions across Canada use resources provided by CANARIE to improve health, the environment, and the nation's economy.

CANARIE issued a Request for Proposal (RFP) to build and deploy a cloud-based initiative that was to be vital to CANARIE's efforts in the years ahead. This project is known as the Digital Accelerator for Innovation and Research (DAIR), an effort that aims to enable small and medium-sized high-tech companies to create and scale complex new products online. Cybera—a not-for-profit alliance responsible for advancing cyber infrastructure in the province of Alberta—partnered with Compute Canada to offer a compelling response to the RFP.

## canarie
### Canada's Advanced Research and Innovation Network
### Le réseau évolué de recherche et d'innovation du Canada

"CANARIE wanted to build a cloud that will help entrepreneurs get up and running with as few barriers as possible," says Everett Toews, senior developer at Cybera. "It didn't want these small and mid-sized businesses to have to buy and build their own hardware and software and support their own IT infrastructure. It wanted them to be able to start a virtual machine and go."

Unfortunately, this journey into cloud computing wasn't without some significant turbulence.

### EARLY EFFORTS ABANDONED: "IT'S NOT US, IT'S YOU."

On a separate project, Cybera had experience with a cloud platform that was popular at the time. "We had a little bit of training and we managed to get it up and standing. We were making progress. It was slow going, but it was still progress," recalls Toews. "However, about a year into the effort, we were having so much

trouble keeping the thing going that we had to start considering alternatives. At the time when we selected it, it was the front runner and seemed to be doing all the right things, but it wasn't working for us."

"After a year of struggling with it, eventually we had to say, 'It's not us, it's you,'" says Toews.

Cybera's development team started to take a close look at what other platforms might be available, and what new initiatives had taken root in the previous year. "We'd been following the story about NASA building its Nebula cloud, and that had piqued our interest," he says. "It was then that we took closer notice of OpenStack and Rackspace."

Toews and another Cybera developer decided to take a trip to the OpenStack Cactus Design Summit to learn more about the OpenStack project and Rackspace.

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> "We see the trend toward cloud computing really changing the way people approach how they get the resources that they need, and reducing the barriers to entry to make it much easier for them to get involved sooner, rather than later."

**Robin Winsor**
President and CEO, Cybera

"We were blown away by what we saw. It was in the early days, but we could tell there was something big underway, in terms of actual working software, a strong community, and a commitment to open source. We knew we had a platform we could work with," he says.

Today, OpenStack is a large-scale open source cloud computing initiative, founded to drive community-established industry standards, end cloud lock-in, and accelerate the adoption of cloud technologies by service providers and enterprises. Currently, OpenStack consists of two core software projects: OpenStack Compute, OpenStack Object Storage, and several sub-projects like OpenStack Image Service.  These projects, along with a vibrant ecosystem of technology providers and future OpenStack projects under way, deliver a pluggable framework and operating system for public and private clouds.

All OpenStack projects are built through a global collaboration of developers and cloud computing technologists who are producing the open standard cloud operating system for both public and private clouds. Already, cloud service providers, enterprises, and government organizations around the world are taking advantage of the freely available, Apache-licensed software to build massively scalable cloud environments.

To get started, Cybera set up a small test environment that consisted of a few nodes and virtual machines. "We could see that the system held potential, but what we built was very basic for what we eventually needed to do. We figured this would be a good time to take a deep dive into OpenStack and learn what we needed to support DAIR's computing needs," Toews says.

## DAIR CLOUD LOWERS BARRIERS TO BUSINESS INNOVATION

That's when the Cybera development group turned to a team of Rackspace experts for OpenStack Cloud, the Rackspace Cloud Builders, to see what support it could provide. "We were looking for practically



**Barton Satchwill (left) and Everett Toews**

any training we could find. It was all so new," Toews says. About a week's worth of training was scheduled, and included members of Cybera's development team as well as a number of CANARIE partners in the DAIR effort, including Compute Canada, the University of Alberta, and the University of Sherbrooke in Quebec.

That training set the stage for the Cybera team to begin its hands-on development of the cloud that would support CANARIE's DAIR cloud. "It took us about a week, working at the University of Alberta, to build what would become the foundation of the CANARIE private cloud," says Toews.

That cloud grew to become a multi-region OpenStack cloud deployment that runs on top of a high-speed university network that spans one region in Quebec and another in Alberta. Each region currently contains about 20 hosts, each node supporting about 1.5 terabytes of storage per node, and the cloud is currently capable of handling up to 400 virtual machines. "Using OpenStack Object Storage, we created three zones to provide us with triple redundancy," explains Toews.

Today, the DAIR cloud supports dozens of small and mid-sized businesses that use their new resource to rapidly collaborate and bring their products and services to market. "The DAIR cloud reduces the barriers to entry for smaller companies, and it is helping them to understand how cloud computing can make a difference for them," explains Robin Winsor, president and CEO at Cybera. "That's very important, because we see the trend toward cloud computing really changing the way people approach how they get the resources that they need, and reducing the barriers to entry to make it much easier for them to get involved sooner, rather than later," Winsor says.

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