Sparking a Digital Transformation with Nutanix Hyperconverged Solutions

by Faisal Jawaid

Science isn't just about test tubes, microscopes, and lab coats. Science is all about exploration, inquiry, and yes, creativity, too. The best science museums nowadays are bright, vibrant places where children and adults alike can see, hear, and feel science in action; places where people can embrace the wonders of the world around us.

TELUS Spark is a science museum in Calgary, Alberta, that caters to dreamers, doers, and makers of all ages. Our interactive exhibits, multimedia presentations, and hands-on demonstrations invite families to learn through play that engages the body and the mind. When an IT opportunity became available at TELUS Spark in 2014, I knew I was the perfect fit.

Entertaining and Educating
Our main attractions at TELUS Spark include: the Being Human space, where guests can explore anatomy and physiology; the Creative Kids Museum, where children under nine can play, climb, read, and use tools; the Earth & Sky gallery, where guests can learn about geology, meteorology, and astronomy; and the Energy & Innovation exhibition, where guests can discover all aspects of energy and its effects on society. Our facility also has an HD Digital Dome Theatre, a cutting-edge planetarium equipped with a 17.7-megapixel digital projector, and a 19,500-watt sound system.

Formerly known as the Calgary Centennial Planetarium, the museum opened on July 1st, 1967, to honour Canada's 100th birthday. In 1983, we expanded to become the Calgary Science Centre, and in 2011, we moved into our new building and rebranded as TELUS Spark.

Everything changed when we moved locations. Our new space was an immersive environment that offered a cutting-edge educational and entertainment experience to visitors and employees. Unfortunately, the same wasn't true behind the scenes.

Inheriting an IT Nightmare
When I started at the science center, I inherited an aging infrastructure with no proper documentation and in need of renewal. Even though everything was virtualized, we were running—and paying for—two different platforms, Microsoft Hyper-V and VMware.

Our data centre was divided in many different silos over the period of time. We used legacy infrastructure powered by several different vendors. Troubleshooting wasn't easy, as I had to log on to different dashboards for compute, storage, and network issues. Typical 3-tier scenario.

Even we were paying hefty dollar amounts in maintenance contracts annually, opening a support and trouble ticket was a pain. I had to jumped on different calls with many vendors to resolve an issue.

Our infrastructure was always failing, and it could barely handle our needs. Our servers kept crashing, and our Active Directory was always going offline. Instead of focusing on providing high-quality IT services for our staff, I was rebooting everything several times a day.

If somebody needed a new SharePoint site, Exchange server or any business application, I didn't have the compute, storage, or network tools to add one. When it came time to upgrade our email servers to Office 365, my hands were tied. I lacked the resources. We needed to move forward, but our environment wasn't up to the task.

I took my time to understand the environment and the business requirements, and then chalked out the roadmap for the possible replacement.

Seizing the Initiative
People on the front end didn't see the frantic action behind the scenes. As long as they could operate, they were happy, and it didn't matter to them how many reboots it took to make it possible. But I knew better, and that's when I started looking at our options and what was the best fit for our company.

We were already using virtual machines, so it made sense to rethink our data centre architecture. The traditional legacy model was constrictive, and there were too many pieces to manage. I wanted to move to a hyperconverged solution, but I wanted the freedom to run it on any hardware.

I spoke with colleagues who had used HPE SimpliVity. I liked what the platform could do, but it ran on proprietary hardware. If something went wrong or I needed to switch after a few years, I couldn't do so because of that proprietary solution. Despite running excellent software, it didn't meet my needs.

I then looked at Cisco HyperFlex, but it was still in its infancy and used fibre interconnect switches, which means it wasn't fully hyperconverged. I spent 16 hours with Cisco learning its ins and outs, but again, it ran on proprietary hardware, and I didn't want to limit myself in the future.

That left Nutanix. Although the company was established in 2009, I didn't know anyone in Calgary who was using their products. So, I called them up and arranged a demo.

I quickly saw that the platform provided everything I wanted in a hyperconverged solution. Unlike the other options, Nutanix ran on third-party hardware. I was free to choose certified equipment from many of my existing vendors, including IBM, Dell, and Lenovo.

Building a Case for Nutanix

I built my case and presented it to our leadership team and the board of directors. At first, they had trouble accepting a solution from a vendor that wasn't a household name. Their primary concern was stepping into unknown territory, and they were right as I didn't have any local references to back it up.

> ## Simplifying #IT infrastructure administration often requires zooming out and looking at the big picture. #Nutanixstories

I explained how Nutanix used a single-pane-of-glass, dashboard-based interface that simplified infrastructure administration. I then presented them how Nutanix's built-in Acropolis Hypervisor (AHV) consolidated our virtual machines' management and would save us $200,000 in hypervisor licenses and maintenance contracts over three years. Finally, I made it clear that we could move to this new hyperconverged platform, speed up our infrastructure, and make the changes we needed without any additional staffing. I could run Nutanix and do a migration of 40+ VMs on my own without any disruption in the daily business.

When they added up all these benefits, the board and my leadership team approved the purchase, and I set about installing our new infrastructure with the help of Nutanix partner Sure Systems.

Saying Goodbye to Rack and Stack

Compared to your typical rack-and-stack 3-tier setup, our Nutanix internet appliances were a cinch to install. I've been in situations where it took months to install and cable blade servers and SANs, but our Nutanix gear was in place—and our Acropolis hypervisor was running—within a couple of hours. We also went from a 30-unit rack to a two-unit rack, which freed up space at our data centre. It also significantly reduced our electricity and cooling costs.

> ## Why rack-and-stack when you can #hyperconverge and go? #Nutanixstories

I then moved our virtual servers to the Nutanix cluster. The Sure Systems engineer showed me how to migrate a couple of our VMs to AHV from Microsoft Hyper-V and VMware, and after a few minutes of on-site training, I was able to move the rest myself. I didn't have to sit through a multi-day training seminar or obtain certification to learn what I needed. It was that easy.

It took me a week to migrate our old data centre, and that was only because I had to do it in the evening, when the museum was closed. As a result, there were no interruptions for end users, and nobody called our help desk to complain. I notified everyone that we'd upgraded our infrastructure, but that was the extent of their involvement. As far as the rest of our staff was

concerned, they came in one morning, and everything just worked faster.

My database administrator was floored. Database backups and restores took minutes instead of hours. SQL access speeds shot up exponentially. Reports that used to take half an hour to generate were ready in two minutes or less, and they could be run sequentially during business hours without slowing our IT environment to a crawl. The days of waiting for overnight reports were over.

We're Ready for Anything
More than anything else, I wanted to work in a stable environment so that I can focus on more productive endeavours—things that can benefit myself and my personal growth, and in turn benefit the organization as well. Nutanix allowed me to do that, creating a relaxed environment behind the scenes.

I automated a lot of the routine maintenance tasks, which freed me to focus on improving quality of service for our users. As soon as I rolled out Nutanix, I was able to set up our new email servers, as I'd promised our senior management. More recently, I upgraded our aging Cisco 7000 switches to the 9000 series. These days, I can do so much more because our Nutanix cluster practically runs itself.

Nutanix also improved our front-of-house operations. With our old system, it took minutes for a ticketing agent to call up a member's file. That process now takes seconds, so we've seen a sharp decline in line-ups to get into the museum and the amount of time guests have to wait. As a staff member, I am grateful for this improvement because we get hundreds of visitors every day, but I can also appreciate it as a parent who enjoys bringing his kids here—kids aren't particularly great at waiting in line.

> **Give your employees the right tools to succeed and let their ingenuity do the rest. #Nutanixstories**

Like so much else, TELUS Spark is closed for now. Our office staff is working from home during the COVID-19 pandemic, but we're still sharing the joys of science with the world. We're running online experiments and activities, weekly live events, and virtual summer camps that will bring the museum to families and children who are stuck at home.

Nutanix made all of this possible. I gave our employees laptops and all the other hardware they needed. Their creativity and ingenuity saw to the rest.

Until We Meet Again
As the city and the province continue to reopen, eventually we'll all return to the office and I'll continue to explore other Nutanix products. These include [Veeam Backup](#) for image-based application-aware backups; [Xi Frame](#) for browser-based desktop virtualization; [Files](#) for

software-defined scalable storage; and Era for one-click database administration and automation.

Nutanix has helped restore my work-life balance. Our data centre runs 24/7, and that means I'm on call evenings and weekends. Fortunately, I rarely get emergency calls these days because Nutanix handles most of the heavy lifting. If a server crashes, Nutanix automatically switches to a backup. If we need to reboot the cluster, it takes minutes, not hours, and I can log in from home using the Nutanix dashboard. It's easy, intuitive, and I can fix most problems with a click or two.

I could go on for hours, but in the end, the thing that matters most are the people that come through the doors of TELUS Spark every day. Nutanix enables us to provide the stellar programming that fosters the inquisitiveness and innovation in all of us. I look forward to the day we can fling the doors wide open again, so we can all explore science and technology together.