

# SUSTAINABLE IT

Virtualization helps Earth Rangers accommodate 100 percent growth while saving 90 percent on data center space and 85 percent on energy costs



For Earth Rangers, creating a “green” corporate headquarters was essential for supporting the environmental messages it teaches millions of children through school shows and online programs. The Earth Rangers Centre in Ontario, Canada, is a LEED (Leadership in Energy and Environmental Design) Gold-certified building and one of the most energy-efficient buildings in Canada, using 79 percent less energy than similar buildings its size. The design optimizes natural sunlight and maximizes clean-air ventilation, while integrated systems recycle wastewater, provide radiant heating and cooling, and capture solar energy. The Earth Rangers Centre sets new standards for environmental construction.

## SOLUTIONS

- BACKUP/RECOVERY/ARCHIVING
- CONSOLIDATION
- GREEN COMPUTING
- VIRTUALIZATION



## CUSTOMER PROFILE

**COUNTRY:** Canada

**INDUSTRY:** Education

**FOUNDED:** 1999

**NUMBER OF EMPLOYEES:** 46

**WEB ADDRESS:** [www.earthrangers.org](http://www.earthrangers.org)

## CHALLENGE

Accommodate organizational growth and support new Web projects while creating a green data center that matches the organization’s vision for an environmentally sustainable building.

## SOLUTION

The Earth Rangers IT group created a virtualized, energy-efficient server environment by running VMware® virtualization software on Dell™ PowerEdge™ blade servers.

## BENEFITS

### Get IT Faster

- Deployed the new virtualized environment on Dell blades in just three days

### Run IT Better

- Accelerated new server deployment from two weeks to 15 minutes
- Decreased time to restore applications to five minutes
- Reduced time for new physical server installation from several days to 20 minutes

### Grow IT Smarter

- Provided capacity for 450 percent future application growth
- Achieved IT requirements while saving 90 percent on data center space and 85 percent on energy costs compared with 1U servers

- Plan to reuse the heat emitted from the data center to warm the building





## HOW IT WORKS

### HARDWARE

- Dell™ PowerEdge™ M600 blade servers with the Intel® Xeon® processor 5000 series
- Dell PowerEdge M1000e enclosure
- Dell PowerVault™ ML6020 tape drive
- Dell OptiPlex™ GX755 desktops
- Dell Latitude™ D630 laptops

### SOFTWARE

- Microsoft® Exchange Server 2007
- Microsoft Windows Server® 2003
- VMware® ESX Server
- VMware View

**“BY CREATING A VIRTUALIZED ENVIRONMENT ON THESE ENERGY-EFFICIENT DELL BLADES, WE HAVE SAVED NEARLY 85 PERCENT OF THE ENERGY COSTS COMPARED WITH A NON-VIRTUALIZED ENVIRONMENT.”**

**Rob Di Stefano**, IT systems manager, Earth Rangers

When it was time to refresh the headquarters' IT infrastructure, the Earth Rangers IT group knew that any new computer systems had to meet those high environmental standards. “Maximizing the energy efficiency of IT is a top priority,” says Gordon Jekubik, chief operating officer at Earth Rangers. “The Earth Rangers Centre is not just our headquarters, it’s a showcase for sustainable technology. We need computer hardware that provides outstanding performance while fitting in a small space, using little power, and emitting the least amount of heat possible.”

The IT group had to make changes quickly to accommodate rapid organizational growth and the launch of new Web offerings. “Our company

grew by 100 percent in a six-month period. To provide new employees with e-mail, file serving, collaboration tools, and typical office applications required a serious infrastructure expansion,” says Jekubik. “At the same time, we wanted to launch a new Web site for kids and revamp our existing corporate site. Our legacy hardware was not energy efficient, and it was reaching the end of its life. It would have been too expensive to upgrade that infrastructure to meet our energy requirements and our new demands. We needed new hardware that we could deploy quickly, and we wanted to invest in an infrastructure that could scale as we continue to grow in the future.”

### **EARTH RANGERS ACHIEVES ENERGY-EFFICIENT VIRTUALIZATION WITH DELL POWEREDGE BLADES**

After considering a number of hardware and software options, the IT group decided to create a virtualized server infrastructure using VMware ESX Server software and Dell PowerEdge M600 blade servers housed in a Dell PowerEdge M1000e enclosure. The servers are connected to a storage array and a Dell PowerVault™ M6020 tape drive for long-term archiving. “Virtualization enables us to run a large number of application servers in a very small space,” says Jekubik. “By virtualizing servers, we can better control the physical footprint and energy use in our data center.”

# “BY WORKING WITH DELL, WE CREATED A TEAM OF COMPANIES THAT ARE COMMITTED TO SHOWCASING GREEN TECHNOLOGY.”

**Gordon Jekubik**, chief operating officer, Earth Rangers

Equipped with two quad-core processors from the Intel® Xeon® processor 5000 series, the Dell blades installed by the Earth Rangers team provide the energy-efficient performance that the IT group needs. “It was clear that the Intel Xeon processors could deliver better performance than competing architectures,” says Rob Di Stefano, IT systems manager for Earth Rangers. “These processors also make an important contribution to the density and overall energy efficiency of the system.”

The Dell PowerEdge M600 blade servers in fact deliver 60 percent greater density than traditional 1U servers, and they consume up to 19 percent less power than competing blade solutions. “We worked closely with the Dell team to ensure that every component of the system delivered excellent efficiency, from the ultra-efficient power supplies and low-power fans to the quad-core processors,” says Di Stefano. “With the Dell PowerEdge blades, we have the performance for virtualization and the low power consumption we need for our energy goals.”

While Dell hardware met the IT group’s technical requirements, the Dell commitment to green computing was a perfect fit for the Earth Rangers’ mission. “The Dell team demonstrated their strong desire to support our company’s environmental vision and goals,” says Jekubik. “They also helped us connect with other technology vendors that are helping to deliver energy-efficient solutions. By working with Dell, we created a team of companies that are committed to showcasing green technology.”

Dell demonstrated its environmental commitment not only in hardware design but also in equipment packaging. “With our previous vendor, we received four or five boxes for each physical server,” says Di Stefano. “Each Dell server comes in just one box. It seems like a small thing, but using fewer boxes helps reduce paper use and benefits the environment.”

## THE EARTH RANGERS TEAM DEPLOYS THE NEW ENVIRONMENT IN JUST THREE DAYS

The IT group was able to move applications from another vendor’s legacy servers to the new environment rapidly. “The migration to the VMware environment on the Dell blades was the easiest migration I’ve ever experienced,” says Di Stefano. “Overall, it took about three days to have everything up and running on the Dell blades. With our legacy system, a similar deployment might have taken weeks. The fast deployment helped us launch the new Web projects and support new employees right away.”

Microsoft® Exchange was one of the key applications that the IT group migrated to the new environment. “We migrated Exchange to the new virtualized environment in just three hours,” says Di Stefano. “We’ve been running Exchange on the Dell blades for more than three months, and we have not had a single issue. It is completely stable and uses very little processor power.”

## VIRTUALIZATION REDUCES SPACE REQUIRED BY 90 PERCENT AND ENABLES RAPID SCALING

By virtualizing servers, the IT group has avoided a massive data center expansion. “We virtualized 44 servers on just three Dell blades, all within a single enclosure,” says Di Stefano. “If we had used 44 1U servers, we would have needed a data center ten times the size.”

The Dell blade system also will enable the IT group to scale rapidly in the future. “Within a single Dell M1000e enclosure we have room to expand up to about 200 virtual applications,” says Di Stefano. “Adding a new blade is simple. It would take about 20 minutes to unpack the server, slide it into the enclosure, and configure it. By contrast, adding a new physical server might take several days.”

## THE IT GROUP ACCELERATES NEW APPLICATION DEPLOYMENT FROM TWO WEEKS TO 15 MINUTES

The new infrastructure is helping to simplify ongoing IT responsibilities. “These servers are easy to manage—just about any IT administrator can do it,” says Di Stefano. “The VMware console also makes it simple to take snapshots, create test and development environments, and complete other routine management tasks quickly.”

This ease of management enables the IT staff to launch new services much more rapidly than before. “In the past, it might have taken us two weeks to order, receive, unpack, and rack a server, and then load all the software,” says Di Stefano. “Now we can create a new virtual server in about 15 minutes. As a result, the IT group can be much more responsive to new requests.”

The virtualized environment also helps the IT group ensure high availability of applications. “We had no spare servers available with our previous infrastructure, and it was increasingly difficult to get spare parts for those old machines. If a server went down, it might take us several weeks to repair it,” says Di Stefano. “If a blade goes down today, we can just move its applications to another physical blade. The applications would be up and running in about five minutes—our employees would hardly notice the interruption.”

## EARTH RANGERS AVOIDS 85 PERCENT OF ENERGY COSTS

Because the IT group chose to virtualize instead of adding racks of servers, the organization can avoid substantial power and cooling costs. “By creating a virtualized environment on these energy-efficient Dell blades, we have saved nearly 85 percent of the energy costs compared with a non-virtualized environment,” says Di Stefano. “We anticipate that we will save about 100,000 kilowatt hours per year, drastically reducing the carbon dioxide output of the data center.”

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In the future, the small amount of heat given off by the servers will be put to good use within the building. “The servers do not generate much heat at all,” says Di Stefano, “but we are planning to use the heat they do emit to help warm the Earth Rangers Centre.”

While the hardware itself leaves a minimal carbon footprint, the new infrastructure also helps reduce the footprint of Earth Rangers’ employees. “We recruited many of our new employees from Toronto, which is about 30 minutes away,” says Jekubik. “Now we have an infrastructure that can support rich collaboration tools and enable workers to telecommute. By working at home a few days a week, or from anywhere in the world, our employees can help significantly reduce carbon emissions. Many employees are already taking advantage of that opportunity.”

## IT GROUP EXTENDS VIRTUALIZATION TO DESKTOPS

With the successes of the virtualized server environment, it’s no surprise that the IT group is planning to extend virtualization to its collection of Dell desktops and laptops by using VMware View software. VMware View will enable the IT group to run virtual desktop environments from the data center while the employees have the same familiar desktop experience as always. The organization currently uses Dell OptiPlex™ GX755 desktops and Dell Latitude™ D630 laptops, though integration of virtual desktop software might enable the IT group to incorporate even more cost-effective desktops as part of the Dell On-Demand Desktop Streaming™ solution when it’s time for a refresh.

“The virtual desktop software reduces the time we spend managing software by helping us deploy security patches and software updates more easily,” says Di Stefano. “It might also allow us to deploy Dell desktops without hard drives. Using these new computers could produce substantial energy savings across the organization.”

## WALKING THE WALK WITH GREEN TECHNOLOGY

With the new server infrastructure in place, Earth Rangers now has another opportunity to showcase green technology. “We’re proud of this data center—and we’ve made it part of the building tour,” says Jekubik. “With assistance from Dell, we have created a sustainable IT infrastructure that reflects our environmental vision and will ultimately help our organization inspire and teach even more children in the years to come.”

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