

Top-of-the-class efficiency

High school saves around €33,000 by simplifying its infrastructure with virtualized Dell servers



The increasing presence of information and communications technology (ICT) in education is a challenge for school IT teams, which often lack resources to match fast-growing demand. Virtualization can help bridge the gap, providing schools with more processing power for less money and effort.

Solutions:

- Green efficiency
- Mobility
- Server consolidation
- Virtualization

visitatie.be
jouw ontmoeting met de toekomst

Customer profile

Company: Visitatie Mariakerke

Industry: Education

Country: Belgium

Founded: 1961

Employees: 550 students,
85 employees

Website: www.visitatie.be

Challenge

Visitatie Mariakerke wanted to offer more IT-based learning, but server management and cost was an issue.

Solution

Helped by Dell consultants, the school achieved its goals with virtualized Dell™ PowerEdge™ servers.

Benefits

- Virtual servers launched in a couple of hours
- Downtime reduced from approximately 20 to four hours a year
- Total cost of ownership cut by around €33,000 over five years
- Need for out-of-hours IT maintenance eliminated
- Power consumption lowered by an estimated €1,374 a year



Visitatie Mariakerke, a school for 12 to 18 year olds in Ghent, Belgium, is something of a pioneer when it comes to empowering students with technology. A past recipient of the country's ICT School of the Year award, it has made ICT an integral part of every lesson. Over time, the school had accumulated seven servers, which Bart Billiet, the school's sole IT Administrator, spent much of his time maintaining. To update applications or fix bugs, he had to take servers off-line, which meant he had to complete maintenance outside normal school hours. Remote management was limited, so certain tasks such as updates were difficult to carry out from home. Billiet used a remote desktop protocol connection for some tasks, but others such as server restarts were not recommended. What's more, whenever a new server was required, the ordering, delivery, configuration and installation process took up to three weeks.

Billiet wanted to explore virtualization with Hyper-V™, part of the Windows Server® 2008 R2 Datacenter operating system, which the school was upgrading to in order to increase the flexibility

of its infrastructure. He saw that the technology would simplify management and lay the foundation for improved facilities for students, such as virtual desktops, while furthering the school's goal to cut carbon emissions. The next step was to find a technology partner that would guide the project. In the past, Billiet purchased Dell™ PowerEdge™ servers and Dell desktops and laptops, which performed well.



"I chose Dell because I wanted to get our infrastructure upgrade right."

Bart Billiet, IT Administrator, Visitatie Mariakerke

How it works

Services

- Dell ProConsult – Design

Hardware

- Dell™ PowerEdge™ R710 servers with Intel® Xeon® Processors X5550
- Dell PowerVault™ MD3000i internet Small Computer System Interface (iSCSI) storage area network (SAN)
- Dell Remote Access Controller (DRAC)
- Dell PowerConnect™ 5424 switches
- Dell Latitude™ E6500 laptops

Software

- Windows Server® 2008 R2 Datacenter – Hyper-V™
- Microsoft® System Center Virtual Machine Manager 2008 R2

"We are using Dell Latitude E6500 laptops provisioned with an additional 12-cell battery. These laptops have a battery life of 19 hours, and so can be used all day on battery, and are then charged at night. Teachers and students don't need to worry about power cables and can use the laptops in any classroom because they're wireless," says Billiet.

Dell had also supplied the school with a Dell PowerVault™ MD3000i internet Small Computer System Interface (iSCSI) storage area network (SAN), so it was natural for Billiet to turn to Dell for help with virtualization. He says:

"I chose Dell because I wanted to get our infrastructure upgrade right. I was pleased with the solutions we had previously bought from Dell, so I felt confident that it had the expertise and experience to support us."

Dell helps design roadmap for virtualization

Billiet began by assessing the school's server needs and sharing the results with Dell. The Dell Global Infrastructure Consulting team (ProConsult) worked closely with him to define and address the school's principal challenges.

"Dell's consultants were a great help in the design and planning stage. I talked to them about our problems, and they really listened before identifying the servers that would work best. Dell also approved my plan for a gradual migration to minimise disruption," says Billiet.

“Our virtualized Dell servers have helped reduce our downtime from around 20 hours per year to just four, which benefits everyone at the school – particularly students.”

*Bart Billiet, IT Administrator,
Visitatie Mariakerke*



Visitatie Mariakerke chose two Dell PowerEdge R710 servers, each fitted with two Intel® Xeon® Processors X5550. Billiet explains: “The PowerEdge R710 servers are ideal for virtualization, with four built-in network interface cards, Intel Xeon Processors and the possibility to add up to 144 gigabytes of RAM.”

Power consumption lowered by €1,374 a year

Billiet easily installed the two servers, virtualizing them with Hyper-V and connecting them to the PowerVault MD3000i SAN using Dell PowerConnect™ 5424 switches, which are optimised for iSCSI. Five servers have been virtualized, cutting power costs. “Our virtualized Dell PowerEdge servers have saved us an estimated €1,374 per year on power,” says Billiet.

The PowerEdge R710 servers are designed to cut power use while increasing performance, with features such as energy-efficient fans and right-sized power supply units. The Intel Xeon Processors use core parking to lower power consumption when servers are running at reduced capacity or are out of use. Luc Van Acker, Head Teacher of Visitatie Mariakerke at the time of the deployment and now responsible for all Catholic Flemish business schools in Belgium, says: “We’re delighted that our virtualized Dell servers have reduced power consumption so significantly. This will provide additional resources to invest in our IT infrastructure, and make a great contribution towards our strategy to cut carbon emissions.”

Dell PowerVault MD3000i simplifies storage and backup

The school initially bought the PowerVault MD3000i for disk-to-disk backup. It gives the school a simple,

affordable alternative to direct-attached storage that improves scalability and simplifies data management. “It was helpful to be able to change the architecture gradually, rather than purchase the entire platform at once,” says Billiet.

It now provides entry-level shared storage for the virtualized environment, supporting virtual machine mobility. “With centralised storage, it’s much easier to manage utilisation because I no longer have to worry about one server having surplus disk space while another is running out,” says Billiet.

“Our Dell PowerVault MD3000i iSCSI SAN is fully redundant – including power supplies, RAID controllers, paths to disks and iSCSI paths. It’s also much easier to manage than software-based solutions,” Billiet says. “It uses existing IP networks so it’s cost-effective to set up, and it allows us to expand storage up to 45 terabytes with mixed SAS and SATA disks on a pay-as-we-grow basis.”

And, crucially, it provides the centralised storage required by the Live Migration feature in Hyper-V. “Our PowerVault MD3000i SAN facilitates live migration of virtual machines, enabling zero downtime maintenance and repairs,” says Billiet.

Annual downtime reduced from approximately 20 to four hours

Thanks to virtualization, IT incidents no longer lead to extended downtime for the school’s students, teachers and administrative staff. Using Microsoft® System Center Virtual Machine Manager 2008 R2, Billiet can dynamically transfer workloads between the two physical servers to carry out maintenance without affecting availability. Says Billiet: “Our virtualized Dell servers

have helped reduce our downtime from around 20 hours per year to just four, which benefits everyone at the school – particularly students. The Failover Clustering feature in Hyper-V has made our uptime higher than ever. If a server were to crash, automatic failover would get our services running again in seconds.”

In the past, patching during the day was impossible, and evening classes meant that after-hours timeframes were also restricted. Billiet says: “With live migrations and the use of failover clustering in Hyper-V, we can easily install updates in school hours, so our infrastructure is always protected.”

Billiet also uses Hyper-V to create virtual snapshots. “When an action has an unwanted outcome, we can easily revert to an earlier point in time using the snapshot technology in our virtualization software. This can be done while the server is running, in just a few seconds. It’s a great source of reassurance. With physical servers this would take a couple of hours and involve downtime,” he says.

Learning tools improved with virtualization

Students benefit directly with access to new learning platforms. For example, Visitatie Mariakerke has installed a centrally managed virtual server that the students use to develop websites for lessons and project work.

In the past, this was only possible with Windows, Apache, MySQL and PHP (WAMP) software installed locally on each computer. “Before, we could not justify the purchase of an additional server to let students develop websites. Now – thanks to Dell’s virtualization solution – students have this valuable tool and at no extra cost,” says Billiet.

“We estimate that our Dell virtualization solution will **help reduce our total cost of ownership by approximately €33,000 over the next five years.**”

Bart Billiet, IT Administrator, Visitatie Mariakerke

The school expects further benefits for students with the introduction of virtual desktops. Says Van Acker: “Our virtualized Dell infrastructure means we will be able to offer our students virtual desktops. As a result, they will have more space on their desks, and their computers will boot up faster.”

Need for out-of-hours IT maintenance eliminated

Virtualization has helped Billiet to work much more effectively. Because workloads can be transferred between the two virtualized servers, Billiet can carry out routine maintenance without scheduling downtime outside school hours. He now spends less time planning and installing updates. To save additional time, he has fitted each of the servers with a Dell Remote Access Controller (DRAC), which gives him access to the servers from home. “I can use our DRAC to mount a CD or DVD or reboot servers while off-site, which saves me time,” says Billiet.

With Virtual Machine Manager 2008 R2, the IT Administrator can launch virtual servers in hours. In the past, the ordering, delivery, deployment and configuration process for a physical server took around three weeks. This means he can build test environments faster, saving around four hours’ work each month. It also means he can respond more quickly to requests

from staff and students, and provide them with a better service. Says Billiet: “The Dell solution enables me to use my time more effectively, which means I’m better placed to help students and staff make the most of ICT for learning.”

Total cost of ownership cut by around €33,000 over five years

The Dell virtualization solution will meet the school’s data processing needs for the next five years, and Billiet no longer has to buy additional physical servers to expand the infrastructure. One advantage of this is that the school can use the savings to invest in virtual desktops, which would bring additional cost and management benefits. In addition, licensing costs would fall because Windows Server 2008 R2 Datacenter provides an unlimited number of Windows Server licences for virtual machines. “We estimate that our Dell virtualization solution will help reduce our total cost of ownership by approximately €33,000 over the next five years. As we add more virtual servers, our savings will increase,” Billiet says.

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