



INDUSTRY
Education

LOCATION
Gujarat, India

KEY CHALLENGES

- Reduce operating expenditures
- Consolidate IT infrastructure
- Implement a “green-campus” initiative

SOLUTION

Virtualize datacenter and desktop environments on VMware platform

BUSINESS BENEFITS

- Improved productivity for IT staff; reduced manpower requirements by 20 %
- Reduced power and cooling costs by 30%
- Reduced TCO by almost 20%



CHARUSAT Selects VMware as the Virtualization Partner to Build a Green and Cloud-Ready Campus

VMware enabled CHARUSAT to build a green campus, and bring the university closer to its goals of achieving excellence in administration, academics, and connecting education with industry. VMware virtualization also helped them save on capital and operating expenditure while improving the availability, scalability, and reliability of their IT infrastructure.

Charotar University of Science And Technology (CHARUSAT) is a privately run university in Gujarat working with the mission of uplifting and transforming society through knowledge and education. The University aspires to be among the top 20 universities of India.

Background

CHARUSAT's journey started in the year 2000, with only 240 students, four programs, one Institute, and an investment of INR 30 Million. Today, CHARUSAT runs 35 under-graduate, post-graduate, MPhil, and PhD Programs with 5000 students enrolled in seven different institutes: Engineering, Pharmacy, Computer Application, Business Administration, Applied Sciences, Nursing, and Physiotherapy.

CHARUSAT's campus is spread across 105 acres and boasts of ultramodern facilities for students to engage in studies, research, and sports. Students are also provided medical facilities, a hostel, a cafeteria, banking, and transportation on campus.

Challenge: Support Growth with Limited Resources

IT plays an integral role since the inception of CHARUSAT and continues to be a crucial part of the long-term goal to rank among the top 20 universities in India by 2015. As the university grew, its IT infrastructure grew complex as well. Each of the university's seven

institutes had stand-alone servers at their premises to serve their specific needs. 30 standalone servers ran a variety of critical and non-critical applications, including ERP systems, e-governance applications, education-specific applications, administration applications, MS SQL 2005, and Oracle. Initially, the entire campus was connected through unmanaged switches, but was later replaced with Cisco managed switches in 2008.

CHARUSAT, being a non-profit organization, manages its operational costs from funds it receives from community and from the fees collected from students. Therefore, they were looking for a cost-effective, flexible, and scalable solution that would help provide excellent educational opportunities for students, and would also help them manage the datacenter with fewer staff and reduce operating expenditure. With virtualization and cloud computing technologies, the IT team considered virtualizing the IT infrastructure to reduce energy consumption, consolidate servers and other resources, and most importantly follow an internal goal to turn the campus green.

“IT at CHARUSAT is the prime mover for the University’s goals of achieving excellence in its functions of administration, academics and industry interaction. Cloud computing is the future for IT in academics, and the first step in that direction is virtualization. VMware has enabled us to achieve the goals we set for ourselves. The solution has helped us save on capital and operational costs and management time, while also giving us flexibility and convenience. Our TCO has come down by almost 20% with added advantage of high availability, better scalability, and reliability.”

Ashok Patel
Hon Advisor (IT), Member Academic
Council
CHARUSAT

Ashok Patel, Hon Advisor (IT), Member Academic Council, CHARUSAT says, “Because we are a non-profit organization, we use donations from our community to build assets, and manage operational costs with the fees we receive from students. So, it was very important for us to manage our resources better. We believed that consolidating our servers would result in reduced power consumption, reduced manpower requirements, and increased productivity.”

CHARUSAT prides itself on its comprehensive Masters and PhD programs. The students for these programs rely on IT to enable them to interact with their teachers and mentors around the clock to address any difficulties they may face.

“Our students need to be able to reach out to their teachers 24x7 to resolve their queries and we needed to create a platform that enabled this,” says Ashok Patel.

Effective utilization of a limited IT budget was also a pressing concern. “Instead of investing in additional servers and software for each of the seven institutes, we were able to virtualize the infrastructure and utilize the same servers and software commonly for all the institutes, thus saving on costs,” says Ashok Patel.

The Solution

VMware emerges as the unanimous choice

The CHARUSAT IT team met and convinced the university’s management in 2010 on how virtualization was the optimal path for CHARUSAT’s journey to the cloud.

Knowing that virtualization was the key to providing the most cost-effective and energy-efficient IT, professors from the faculty of engineering, IT, and computer science evaluated virtualization solutions from vendors in the market. CHARUSAT worked with I System India Pvt. Ltd. to compare solution features, such as vMotion, DRS (Distributed Resource Scheduler), vCenter, mirroring, and high availability that were very important for them to simplify the maintenance of their datacenter, optimize resource utilization, and improve the uptime of all applications.

The evaluation concluded that the VMware solution, with its stability and comprehensive feature set was the best fit to address CHARUSAT’s IT priorities.

“Mr. N P Singh (Director) and his team at I System India Pvt. Ltd have been with us right from the beginning, advising us on the technology and commercial options, and ensuring that the virtualization implementation was smooth,” says Ashok Patel.

With virtualization, the distributed servers were consolidated under one datacenter. Today, the datacenter has six HP blade servers with two XEON XP CPUs on each blade. Each blade server is supported with 48 GB of RAM and 300 GB of internal hard disk. The servers leverage HP storage area network (SAN) with 10 TB storage capacity. The entire infrastructure is virtualized with 12 VMware vSphere 5 licenses running both Windows and Linux operating systems. At present, 22 virtual servers are hosted on the 6 physical servers for the seven institutes and departments. With the efficiencies realized through virtualization, the current infrastructure can be easily scaled to accommodate 30 to 40 additional virtual servers to cater to future growth.

The campus has around 1,500 desktops connected to the network. The IT team has migrated all the applications that these desktops access and certain other e-governance applications to the new cloud-ready platform.

VMware vMotion and High Availability (HA) ensure continuous running and availability of all systems and applications. The IT team can now perform hardware maintenance on all virtualized servers with almost no impact to the students or staff.

Virtual labs are hosted on the virtualized infrastructure and can be accessed by students irrespective of their course, which would not have been possible with the physical infrastructure.

Business Results & Benefits

CHARUSAT has reaped enormous benefits with its virtualized infrastructure.

Significant savings in revenue, power, and manpower

As CHARUSAT depends on charitable contributions for building capital resources, its primary focus has been

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VMWARE FOOTPRINT

- 22 virtual servers on 6 HP servers

APPLICATIONS VIRTUALIZED

- E-Governance applications
- MS SQL 2005
- Lab applications and database

PLATFORM

- VMware vSphere 5.0
- HP Servers

on savings in revenue and manpower. By consolidating 30 servers to just six blade servers (12 sockets), the IT team has made significant monetary savings. Fewer servers have also lead to a 30% savings on power and cooling costs thus supporting their “green campus” drive. Further, the manpower required to manage the datacenter has dropped by 20%.

Centralized administration makes things simple

As all the servers and applications reside in a central location, administering the resources has become much simpler.

Reliable data backup

Before virtualization, technicians would back up data on either a CD or hard drive. The IT team has now deployed an HP data autoloader (HP 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader) which continually backs up data on tapes. VMware high availability ensures that there is less meantime before failure (MTBF) and failure has been nil since the VMware deployment. The additional reliability offered by VMware gives CHARUSAT’s IT team the confidence and students the convenience of accessing necessary resources 24x7.

Efficient management of student and academic information

Teachers and university staff log into the university’s ERP system for creating timetables, allocating resources, creating teaching lessons, loading presentations, and so on. The IT team has virtualized the expansion of its ERP systems and student portal to minimize costs, while providing a resilient infrastructure to meet the demands of the university’s operations. They have created an FTP server, which allows students and faculty to save their work, files, literature, and other data on to the server allowing easy data sharing and access for students and faculty. This eliminates the need to save and carry files or documents on pen drives or send them by email.

Connecting education and industry over the cloud

To help CHARUSAT become a world-class university where teaching and learning facilities are unmatched, the IT

team enabled the campus with virtual connectivity for students pursuing their post-graduation. This platform helps students to work collaboratively thus encouraging creative learning, faster teaching, and creative problem-solving.

Students pursuing professional degrees work on many interesting projects and develop applications that may be useful to the industry. The IT team at CHARUSAT plans to soon create a public cloud and facilitate local, small-scale industries with a cost effective way to access cutting-edge IT resources developed by the students.

“If we bring together the industry and the students on the cloud, it will benefit both the state and the country,” says Ashok Patel based on his 30 years of rich industry-experience.

The Charotar Trust also runs multiple non-profit social organizations, such as a school, hostel, marriage bureau, and convention hall. The CHARUSAT IT team plans to connect these bodies together for easy manageability through the cloud using VPN connectivity.

Looking Ahead

“In future, we are planning to create our own email server on this virtualized infrastructure. As we already have a robust virtualized platform for this, we can easily virtualize our desktops. This will offer us financial advantages as well. We are looking at VMware View and carrying out further testing,” adds Ashok Patel.

