



George Mason University

Cloud Computing with IBM

Problem

Provide students with access to professional software and computational environments.

Solution

Virtual Computing Lab / VCL

Goals

- Increase student access to professional and research tools.
- Improve IT response to teaching and learning needs.
- Reduce costs associated with delivering software as a service.

Results

- Reduced operating costs
- Resolved lab administration issues
- Extended access to software
- Extended distance education capabilities
- Reduced carbon footprint

Named the number one national university to watch in the 2009 rankings of U.S. News and World Report, George Mason University is an innovative, entrepreneurial institution with global distinction in a wide range of academic fields. Located in Northern Virginia near Washington, D.C., Mason provides students access to diverse cultural experiences and the most sought-after internships and employers in the country. Mason offers strong undergraduate and graduate degree programs in engineering and information technology, organizational psychology, health care and visual and performing arts. Mason professors conduct groundbreaking research in areas such as climate change, public policy and the biosciences, making George Mason University a leading example of the modern, public university.

The Challenge

To become leaders who can address the complex challenges of the 21st century, George Mason University students must develop critical skills in acquiring, analyzing, evaluating, integrating and applying knowledge to generate and develop new ideas and tools. Mason students need tools to learn and then demonstrate research, creativity and critical-thinking in college as well as the workforce upon graduation.

Like all universities, Mason provides students with access to computing services to help them develop these critical skills. However, students face challenges when using traditional computer labs including limited lab hours, limited seats during times of high demand and travel to and from Mason's metropolitan campuses in heavy Northern Virginia traffic.

As physical facilities and equipment age, and as increasing attention is paid to efficient use of the university's resources, it is challenging to repair, maintain and support physical computer labs. While capital funds help build physical labs, capital funds do not provide for maintenance, repairs, renovations, support or technology replacement. Outfitting a physical computer lab with computers and software can cost from \$10,000 to hundreds of thousands of dollars. In higher education, new requests for distance education support, active learning spaces and expensive professional tools expand this cost range. When computers need to be replaced at the end of their regular lifespan, the fiscal challenge begins again.



IBM Cloud Academy

"Our VCL provides better software access and better computational capacity for our students at a lower cost. The decision to invest is easy."

— Sharon Pitt

The solution

Mason uses fully configured IBM® BladeCenter® technology and open source virtual computing lab (VCL) software (<http://incubator.apache.org/projects/vcl.html>) to provide a VCL for its academic and research communities. The full technical infrastructure involves the provision of systems and network security, high-speed network services, a Web portal, a database server, a software image library and management nodes.

The Virginia Virtual Computing Lab (VAVCL), hosted from the Fairfax campus of Mason, permits students to reserve and access a virtual computer, along with a desired set of applications, by means of the Internet. At Mason, for example, a student taking a statistics class might access the Statistical Package for the Social Sciences (SPSS) to complete a homework assignment from a residence hall. Another student might access SPSS from home, before heading to work. Yet another student taking that same statistics class might access SPSS through a wireless hub at a local restaurant.

For students, computer requirements to access the VAVCL are very small. Even the most remote student who might be limited to using an older computer or a computer in a public library, can access state-of-the-art computational resources. Network requirements to access and use the system are as small as one-quarter megabit per second during active use. Therefore, any point of minimal Internet access is sufficient to open the door for service.



To provide services at the lowest cost, the VAVCL has been created strictly using open source and free software. The open source VCL code is distributed through the Apache Incubator program. Mason actively contributes to and expands the technical capacity of the VCL code as a member of the VCL development community. The entire VCL solution is accessed online; therefore, the lab effectively goes wherever students go.

For IT professionals, the VCL helps address reduced budgets, increased power costs, aging equipment, application “wars” and the need to provide, in a timely manner, software for teaching and learning. One statistic is most compelling: The yearly cost of investing in and maintaining a VCL at Mason is 21 percent of its physical counterpart.

Improvements in the areas of software licensing and maintenance are made through the VCL model as well. Since the VCL builds and hosts an online “machine” for its users, there is no expense in maintaining up-to-date computers in the field. VCL levels the playing field for students, ensuring that high-end computing power is available for the most complex disciplinary task, no matter what kind of computer the student owns or uses to access these tools. Software use is tracked and metered allowing license purchases to match actual software demand.



© Sharon P. Pitt and George Mason University 2010

Contact Information

Sharon Pitt, Executive Director
George Mason University

4400 University Drive,
Fairfax VA 22030
Tel: 703.993.3178
Fax: 606-432-7703
<http://www.gmu.edu>

[www.doit.gmu.edu/staffSection.
asp?page=vcl](http://www.doit.gmu.edu/staffSection.asp?page=vcl)

Contact Information

Chris Bernbrock
Program Director,
IBM Cloud Academy

IBM Global Education Industry
Tel: 714-472-2515
cwbernbr@us.ibm.com





© Copyright IBM Corporation 2010

IBM Corporation
Software Group
Route 100
Somers, NY 10589 U.S.A.

Produced in the United States of America
12-09
All Rights Reserved

IBM, the IBM logo and ibm.com are trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at ibm.com/legal/copytrade.shtml.

Other company, product and service names may be trademarks or service marks of others.

IBM provides this publication "as is," without warranty of any kind, express or implied, including the implied warranties of merchantability or fitness for a particular purpose. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions; therefore, this disclaimer may not apply to you.

IBM reserves the right to change specifications or other product information without notice. This publication could include technical inaccuracies or typographical errors.

References to IBM products and services do not imply that IBM intends to make them available in other countries.

The IBM home page can be found at ibm.com.



Please Recycle