splashtop®

Case Study – Higher Education

Cornell University's College of Architecture, Art and Planning uses Splashtop Enterprise to deliver Adobe Creative Suite, AutoCad, Maxwell, Rhino, and V-ray applications to students using a hybrid 'Amazon Cloud'.

Delivering 2D/3D Applications Using a Hybrid 'Amazon Cloud'

Cornell University's 14 colleges, schools, and other academic units offer more than 4,000 courses, 70 undergraduate majors, 93 graduate fields of study, undergraduate and advanced degrees, and continuing education and outreach programs. The College of Architecture, Art and Planning (AAP) is regarded as one of the oldest and most respected architecture colleges in the United States. Students uses a diverse set of specialized (and often expensive) software. Their coursework and projects typically require 3-D modeling, use of extensive databases, and rendering, among other processor-intensive activities. To accomplish these projects, students use various applications such as Adobe Creative Suite, AutoCad, Maxwell, Rhino, and V-ray. Students are encouraged to provide their own laptops to facilitate collaborative work in a variety of locations. However, not all of them need or can afford to own all the programs they will use on a regular basis , relying instead on the college to make the apps available when needed.

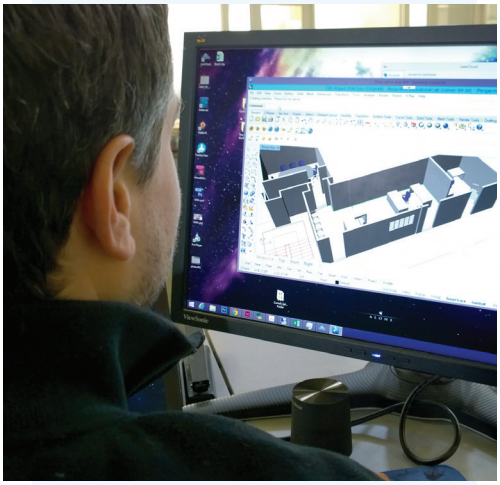
For Andre Hafner, IT Director of the AAP College, delivering and managing the required applications created a significant burden: installing software on individual students' laptops, assuring licensing compliance, and managing the removal of leased software when students left the college. With as many as 800 students and staff on campus and another 200 off campus, the administrative burden was overwhelming. Hafner went looking for an easier way to deploy and manage the required software programs.

The Challenge

Andre Hafner, IT Director of the College of Architecture, Art and Planning, needed an easily administered, cost-effective way to deliver and manage licensed software programs for 1,000 students and faculty. While students provide their own laptops, some do not need (or cannot afford) to own all the specialized software they use for 3-D modeling, rendering, and other activities, nor purchase expensive laptops to support these applications.

The Solution

To meet his demanding needs, the top priority, by far, was performance, followed by cost, scalability and ease of installation and maintenance. After evaluating other solutions, including Citrix XenDesktop, Hafner concluded that Splashtop Enterprise was the only choice. No other product came close to delivering the required performance, scalability, flexibility, functionality and affordability while also keeping costs low.



"We are an architecture school, an art school, and a planning school."

"Performance was the main thing we were looking for. I needed an application that would give [students] an almost real-time experience, with very little latency."

"The advantage of this setup is that in four years I'm not stuck with a $100,000 piece of hardware. Instead, I just spin down my EC2 instance and push my image (AMI) to a new piece of hardware on Amazon. It doesn't cost me any more money and is available 24x7."

Delivering Adobe Creative Suite, AutoCad, Maxwell, Rhino, and V-ray to Students

Hafner explains that the College of AAP at Cornell encompasses at least three quite different disciplines. The architecture students create and work with large 3D models that show texture, materials, and multiple types of lighting. Students need the ability to rotate models in all dimensions and zoom in on details. The city and regional planning students work with large data sets, but do not typically require 3D modeling. The art students use programs that require both 2D and 3D applications, depending upon the specific course content. Hafner needed a solution to support all these use cases, and more.

Splashtop Performance and Flexibility Surpassed that of XenDesktop

Hafner ran a trial of Citrix XenDesktop alongside Splashtop Enterprise. He found that AutoCAD performance (in 2-D mode) on the test instance of XenDesktop was no match for Splashtop streaming 3-D AutoCAD from a desktop computer to a student's laptop.

How Splashtop Cuts Costs: Recycling Dell 960s Reduces Hardware Costs

Hafner repurposed more than two dozen older desktop computers to run Splashtop Streamer and serve the 3D apps. These desktop computers are connected to Splashtop Center hosted in Amazon (AWS) via a high-speed 10Gbps connection. The only hardware cost for this setup was adding nVidia Geforce 650 video cards for the desktop computers. Making good use of the outdated computers was a real bonus. Hafner said, "I was tired of recycling 4 year old machines that had plenty of life left in them."

CORNELL/SPLASHTOP ARCHITECTURE:

Splashtop Center
AWS cc2.8xlarge
Splashtop Center
2D app server

AD Controller
AWS t1.micro
Local Active Directory Controller

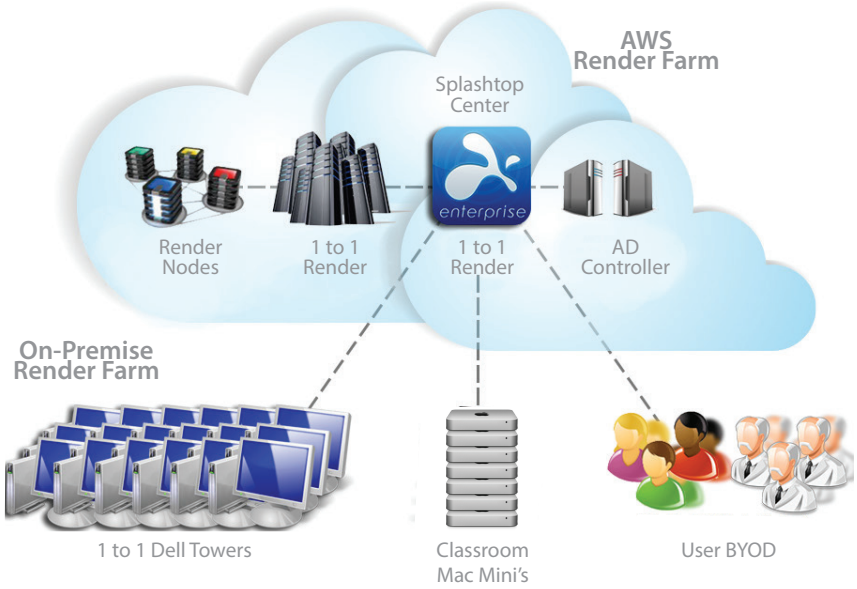
1 to 1 Render
AWS cc2.8xlarge
running Rhino, vray, Maxwell
used for pure rendering, assigned via Splashtop Center permissions

Render Nodes
AWS c1.xlarge
running vray spawner
simply boot up from a phone or web. When Rhino is running on the main Splashtop Center it will connect when needed

1 to 1 Dell Towers
Recycled Dell 960's with updated SSD HD's and Nvidia Geforce 650 Video cards running Splasthop Streamer. All lab apps are installed here. Called 3D accelerated stream.

Classroom Mac Mini's
Mac mini's installed in classrooms with large 70" LCD's running splashtop Streamer for SmartBoard use

User BYOD
Student, Faculty, Staff Laptops/Desktops/ iOS/Android



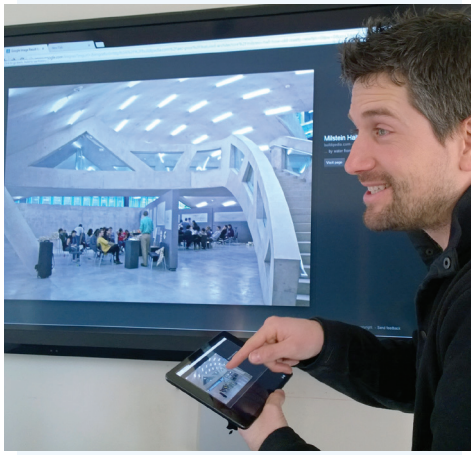
Using Amazon AWS as a Render Farm

Hafner installed Splashtop Center on Amazon Elastic Compute (EC2) cloud servers. These servers authenticate users and deliver the 2-D applications. Besides the initial cost savings, Hafner explains how the savings will continue into the future:

"The advantage of this setup is that in four years I'm not stuck with a $100,000 piece of hardware. Instead, I just spin down my EC2 instance and… push my image to a new piece of hardware on Amazon. It doesn't cost me any more money and is available 24x7. Of course, there will be a continuing supply of outdated Dell computers to be repurposed for application delivery with Splashtop," said Hafner.

Student Self Service Reduces Staff Expenses

Staff expenses are also reduced with the Splashtop implementation. Hafner described the Splashtop implementation this way: "The amount of setup time was ridiculously small as I had the whole thing up and ready to go in less than an hour!" With the Splashtop implementation, providing student access to applications requires less time and staff. Instead of tracking license usage for each student, or installing software on each student's laptop,



"The amount of setup time was ridiculously small...I had that whole thing up and ready to go in less than an hour!"

"The advantage is that Splashtop is a very fast, nimble, and cost effective system. It just works really well."

Hafner simply adds the student to the Cornell Active Directory Domain, creates a shared folder for them, and sends the student an email with instructions for installing Splashtop and connecting to the applications. Application deployment is virtually "self-service" for students. When a student leaves, Hafner removes their name from the Active Directory and clears out their folder.

Reduced Software Licensing Expense

For applications that typically require a license for each user, Hafner has a cost effective solution. He installs the program (licensed to AAP) on a single university-owned computer, and students use Splashtop to access the application from their own laptops. The result is a savings of license fees, IT staff time, and management complexity.

Students Save Money, Too

Some of the applications that students use while studying at Cornell are expensive, even when student discounts are available. And students use some of those applications only a few times throughout their time at the college. Splashtop software allows students to use the applications when needed, rather than purchase them, resulting in a significant cost savings. Additionally, the students don't need to purchase expensive laptops to run these demanding applications – saving money.

Splashtop Benefits Students, Faculty, and IT Staff

The Splashtop implementation has benefits for everyone at the College. For students, there is fast, easy access to the applications they need, on their own schedule. Before Splashtop, student access to many of the complex apps required a visit to the computer lab, and was limited to the hours the computer lab was open. Now, with Splashtop, students can access programs whenever they need to, from any location, including their dorm rooms. Faculty members have immediate access to the applications they need for teaching. With Splashtops whiteboard tools, they can be more efficient and productive in the classroom and with their instruction. Hafner now supports the faculty and students with minimal staff and expense.

Expanding Splashtop Deployment at Cornell

Other colleges at Cornell have approached Hafner to learn more about using Splashtop. For example, professors can be more mobile in lectures by accessing their Mac and SmartBoard from anywhere in the room. Students could be allowed to access their computers from anywhere on the campus – accessing their applications or typing notes directly into their computer. He is happy to show them why he recommends Splashtop, and summarizes the many benefits of Splashtop this way: "The advantage is, it is very fast, nimble and cost effective. It just works really well!"

splashtop®

Splashtop, Inc.

1054 S. De Anza Blvd., Ste. 200
San Jose, CA 95129 USA
408-861-1088

www.splashtop.com