Student Virtual Lab and Software Access

Account/Department
ITS Academic Technology

Divisional VP:
Dr. Alex Enyedi - Provost Office

Estimated annual initial costs:
Server with beefy video card ($17,000)

Estimated annual on-going costs:
Not asking for any ongoing funding for this proof of concept/pilot phase. If successful, a subsequent project will be submitted for full deployment.

Funding Availability?:
Fully Funded - includes initial and on-going costs

Need to Know:
David Marshall, Breck Robinson, Elijah Alexander

Portfolio Type:
Academic Technology: Activities that are part of or support HSU’s instruction or research programs.

Portfolio Type Alignment:
“Student Virtual Lab and Software Access Project” provides additional student access to Academic computer applications such as SAS, Mathematica, ArcGIS, SPSS, ENVI, and many, many others.

Requestor name:
Anna Kircher

Project Champion:
A. Cade Webb

Primary Customer(s):
Campus-wide

What problem are you looking to solve?:
Providing students with appropriate and contemporary access to what is needed for teaching and learning is core to academic success. Outcomes and objectives are not achievable given the current infrastructure.

Although HSU currently offers a virtual computing environment, the existing system was designed a number of years ago and has significant limitations. It is not scalable, was identified as a service that is not maintainable, has high ongoing costs, and is not providing students and faculty with a positive experience.
This service was introduced to HSU around 2011. Since that time it has not been embraced by the campus community because of the reasons listed above.

Other considerations:
Computer labs are often full or scheduled not allowing student’s access to the technology.
Students need access to computing resources from off campus
Make it easier for faculty to test software before it is used for teaching and learning
Lower implementation time for software requests
Enable ITS to react to student needs more quickly
Improve consistency of student experience
Computer refresh is expensive, this solution may allow for cheaper refresh.

Which departments or processes are affected?:
Lab & Classroom Support, System Administration, Client Technology Integration, Faculty

What is the consequence of not doing this project?:
Our current solution is too expensive to maintain and has not produced a desired outcome.

What would a successful solution look like?:
Initially this will be a proof of concept and pilot project where students will be able to run lab software on their own laptops, anytime, anywhere. This could in turn lower the ongoing replacement cost for computer labs. At the close of this pilot phase ITS will evaluate results to plan the next steps which include final costs for infrastructure and licensing - one time and ongoing as well as staffing requirements to support. Subsequent project proposal will be submitted for the production solution to replace our current Citrix service.

How else might you solve this problem?:
We considered two fully cloud-based application delivery platforms: Software2 and Frame (formerly called “Mainframe2”). We also researched a product called “Workspot” that provides a streamlined, cloud-based front end to our existing Citrix infrastructure (it works with other virtual infrastructure products as well). The projected implementation costs of these solutions significantly exceeds what we are currently paying for Citrix.

Peoplesoft is not an option for providing virtual applications and desktops to students.

Student Success:
In today's professional, personal, and academic environments access to, and the understanding of, computers, software, and other technology is critical. In order to be successful both in their academic careers and in their life after HSU, our students need timely and convenient access to computing resources. The goal of the “Student Virtual Lab and Software Access Project” is to explore how best to expand, through virtual desktops and applications, students’ access to the technical tools they require to successfully complete their HSU course work.

With access to reliable and well-performing virtual computing resources, students will be able to perform most all of their computer-based work from outside of our traditional computer labs. For example, from the dorms or other off-campus housing.

What resources will this project require?:
Server Administration - Elijah Alexander & Brian Sherman
Virtual Workstation Operating System Configuration - Breck Robinson
Virtual Application building - Brent Oparowski & David Pearson
1-2 Faculty members will be identified and added at the Proof of Concept Phase. Additional functional participants will be identified and added at the Pilot Phase.

**What is your deadline?:**
08/11/2017

**And is your deadline a hard deadline?:**
No

**Why must the project be completed by this date?:**
The goal of the project team is to have a production version of the New Student Virtual Lab available to all students in the Fall of 2017. In order to meet this goal, the technical investigation of virtual computing solutions that this project encompasses needs to commence at the beginning of 2017.

**Explanation of annual estimates:**
ITS currently spends $24,000 a year on its’ VLAB service which does not include necessary hardware refresh. We have struggled to fund refresh through year end breadcrumbs.

ITS has purchased (2) of the (3) servers needed for this project as well as the Microsoft operating system licenses for all (3) servers. Funding will be provided from the CIO’s budget to purchase a server with a beefy video card for ($17,000) that will enable us to include graphic intensive applications in this project. If project is successful, refresh money would be covered when we convert from our current VLAB licensing.

We fully expect that this project will be successful, however if it was decided to not move forward with a full implementation we can use all of the hardware to improve our current VLAB service.

**Type:**
Replace

**Affected or Related Systems/Modules:**
Other

**Other Affected or Related Systems/Modules:**
Our existing vLab system (Citrix)

**Considerations / dependencies:**
None

**Information Technology (IT) Feasibility Statement:**
During the first half of 2016, ITS conducted a project for a Bring Your Own Device (BYOD) pilot, approved through Fall 2015 prioritization and intended to identify the costs, services and support required to bring BYOD to HSU. For more on that project, please see: [https://www2.humboldt.edu/its/projects/bring-yo...](https://www2.humboldt.edu/its/projects/bring-your-own-device-byod-pilot-project)
The BYOD pilot extended the Citrix environment that supports our current VLAB environment. Through that project, we learned not only the high cost of this technology, but also the high level of staff support required to maintain it. We also received mixed feedback from our campus pilot testers about ease of use and a need for additional features and flexibility if it were to be truly useful to them, something that would further tax current staffing resources to support.

As a result, our final BYOD recommendations report outlined an alternative approach: conducting a proof of concept using RDS as a potential replacement to Citrix for the student VLAB, something that could later contribute to a BYOD solution. While, this project request is strictly about the student VLAB, with respect to feasibility, we are leveraging our BYOD pilot and Citrix experience as a reason to investigate an alternate solution.

ITS recognizes there will be a learning curve for staff to learn the new hypervisor to support Hyper-V and there may be challenges for Linux and Chromebook clients. While ITS staff are accustomed to continuous education to stay abreast of new technologies, the extent of training required for the various components of this project range from moderate to extensive for the application distribution components.

Overall, the goal is to give students a lab experience, delivered remotely, removing barriers that may limit their access to these tools. The project scope will be limited to testing desktop and laptop devices; phones or tablets will be part of a later phase.

On the benefit side, from our research we expect:
Reduced maintenance workload; no need to maintain Xen cluster. May be able to reduce number of physical and virtual servers.
Reduced costs, no Citrix licenses needed.
RDS Cal licenses already owned should transfer over
Integrates with our existing system management software SCCM, leveraging existing skill sets and tools for a more efficient operation.

The primary components of the project and their relative sizing are as follows:
1. Infrastructure Build: size Medium, estimated duration 3 months
2. Application Distribution: size Large, estimated duration 6 months, begin in month 2, running in tandem with #1 through month 7
3. Proof of Concept - involving 1-2 faculty with 1-2 software packages: size Medium, estimated duration 6 months, begin in month 3, running in tandem with #2 through month 7
4. Pilot - involving larger group of users and software packages; size Small, estimated duration 1 1/2 months, begin in month 7
5. Results, Recommendations and Next Project Request: size Small, estimated duration 1 1/2 months, begin in month 6 to gather information from steps 1-3 to-date, and run through close of pilot, estimated to be month 9.

Total estimated duration - 9 months
Composite size: XL

ADDITIONAL INFORMATION:
Our proposed solution could also solve two significant issues for distant learners. First, required software may have licensing barriers. Secondly, complicated software configuration may take time away from learning activities. For example, last semester the GSP program offered an online hybrid class that required software. The software
package (ENVI) was difficult for students to install, configure and license. The faculty member explained that it took several classes to help the students fix issues on their devices, several instructional hours were lost.