UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

Creation of virtualized SPSS computer lab

Title

B.I. Moody III College of Business Administration
College of Liberal Arts,
Department of Communication

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Manager

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Name of Submitter

Moody College of Business Administration (MCOBA)
Information Systems & Multimedia Laboratories (ISM)
College of Liberal Arts (COLA) Communications Department

Organization

Title: **<u>Creation of virtualized MCOBA SPSS computer lab</u>**   Date: July 16, 2020

Name (Contact Person):   <u>Angel Littlejohn</u>

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Department/College/Org: Moody College of Business Administration (MCOBA)
Information Systems & Multimedia Laboratories (ISM)

ABSTRACT (250 words or less):

This grant proposal is requesting support to create a virtual lab existing solely in the cloud to ensure that students have access to software applications used in classes without forcing them to come to campus.

Using AWS AppStream 2.0 will allow us to deliver desktop applications to any computer anywhere, secure our applications and data to allow only legitimate users access, centrally manage applications, scale the amount of virtual desktops up or down without having infrastructure to worry about, and integrate with Active Directory so that students can bring their identity without having to remember yet another username and password. AppStream 2.0 lets students access the applications they need on any computer, whether they're in the classroom, the library, a café, or at home.

Virtualizing a lab to which all remote and hybrid marketing and communications students can have access would make SPSS hardware-agnostic. The same desktop would be available to all students (since it functions within a browser window), no matter what hardware they were using, as long as they have a supported browser and an Internet connection.

Purpose of Grant and Impact to Student Body as a Whole

The need for virtualization has never been so important as right now. With the shift in the learning paradigm, the playing field has become uneven and skewed, particularly where technology is concerned. Students may not have access to PCs or may have to share devices with siblings in the same household. There is a myriad of scenarios in which students become technologically unequal. Virtualizing these labs will level the playing field by providing the exact same experience with minimal hardware requirements. Students would not be required to come to campus to accomplish the learning objectives of the course.

Students will have access to the lab twenty-four hours a day, seven days a week and can learn anytime from anywhere. The classes would not be limited by students' access to specific computers on campus or in the classroom. We could use the positive experience gained in this application of AWS AppStream 2.0 to serve as a template university-wide for implementation of more labs thereby reducing IT and hardware costs overall, and providing a better student experience without the frustration of being bound by very specific hardware requirements. As the learning landscape changes from face-to-face to remote, then back to face-to-face, and possibly remote again, the fluidity of these cloud-resident labs remains the most significant factor.

Ease of administration is also tantamount. We no longer have to touch every single physical computer to update the operating system or the software required for the class. Only the image needs to be changed. It also eliminates the need to upgrade or replace physical hardware in the labs to fit the requirements of the software. In one place and at one time, we can effectively update the virtual desktops of hundreds of machines, saving on manpower and time. AWS AppStream 2.0 security can be accomplished by integration with Active Directory. Students can use their identities from the university in an SSO environment and not have to remember yet another password. The pool of students allowed to use the lab can easily change semester to semester by wiping out the security group membership and adding the list of students enrolled for that class the next semester into that security group.

Costs are also greatly reduced with academic pricing and the type of academic license that the university has with Microsoft. The A3 academic license for faculty and students allows a transfer of that license to virtual machines. This would allow those students who use MacBooks and Chromebooks to actually use the full Microsoft Office Suite that is included with their license.

Communication undergraduate and graduate students use SPSS to perform a variety of statistical analyses related to advertising, public relations, and mass communication. For example, students in Communication Research 386 courses work on a project that analyzes data gathered from the community in order to prepare an effective strategic communication plan for a local business or non-profit. In the same course, students may gather and analyze survey data related to how news media messages affect local views on public policy. This allows for undergraduate students to receive real-world instruction related to how statistics can be used to create and interpret communication messages. Additionally, graduate students use SPSS in the Communications program to examine statistical data both in research methods courses and in their own work, crafting and interpreting rigorous analyses for theory-driven research papers, theses, and projects

such as advertising or public relations campaigns. Students' research plans include creating and gathering data using surveys, experiments, and content analysis of media messages. Previously, students used a single computer lab with SPSS licenses in Burke Hawthorne Hall, limiting the availability of access to the software.

Moody College of Business' Marketing 375 and 425 and classes teach statistical analysis and how it relates to business. Students are presented with raw unanalyzed data and are expected to perform statistical analysis, and also interpret and apply the results. Before the emergence of COVID-19, students used the computer labs located in FG Mouton 110 and 111. Students would have to install the SPSS package on their personal computers, and should something happen to their hardware and they need to reinstall it elsewhere, it places a burden on the STEP manager to issue another license key for an individual as well on the student to install software onto hardware with which they may not be familiar.

Funding Objectives
- Establish a new technology to support current and future teaching methods.
- Improve instructional quality and enrich student-learning experiences.
- Improve technology equality among students

The MCOBA ISM manager has 15 years of experience with virtualization, 10 of those being with Amazon Web Services directly, thus the department is very familiar with the design and implementation of entire virtual systems. The MCOBA ISM Office is prepared to manage upkeep and maintenance of the virtual machines that this grant would provide and will immediately troubleshoot any problems that may occur.

Responsibilities
The person responsible for implementation and oversight of this project is Angel Littlejohn. Responsibilities include:

     a. Implementation
- Angel Littlejohn/MCOBA ISM

     b. Installation
- Angel Littlejohn/MCOBA ISM

     c. Maintenance
- Angel Littlejohn/MCOBA ISM

     d. Operation
- n/a

     e. Training (with qualifications)
- MCOBA ISM will establish tutorials for students in the virtual lab use and provide them to the instructors for posting on Moodle.

Budget Proposal

1. **Equipment**	$0	
2. **Software**	$0	
3. **Supplies**	$0	
4. **Maintenance**	$0	
5. **Personnel**	$0	
6. **Other**	**$1, 286.00 cost of virtual computer lab machines per year**	
7. **Other**	**$ 359.90 cost of server to serve as license server for SPSS**	
8. **Other**	**$ 2.00 cost of running Image Builder for twenty hours at $.10 per hour**	
TOTAL:	**$ 1,647.90 per year**	

Budget Details:
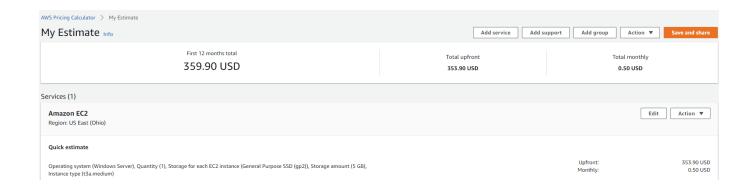Amazon Web Services pricing calculator
65 MKTG 375 and MKTG 425 students total
720 hours of usage per month
Total cost includes10 hours running the Image Builder at $.10 per hour for a total of $1.

Amazon AppStream 2.0 Pricing Tool

Workload Input

Total unique users in your organization:	80
AWS Region:	US East (N. Virginia)
Instance type and size:	standard.medium
License model for user fee:	Academic license included
Buffer capacity as % of concurrency:	20%

Switch to the Usage Pattern worksheet, then enter in your expected concurrency per hour for weekdays and weekend days. The outputs will then be automatically calculated based on the inputs above and entered Usage Pattern.

Outputs	
RDS SAL fee per user per month	$0.44
Price per streaming hour	$0.10
Price per stopped instance hour	$0.025

	Used Hours	Buffer Hours
Monthly hours	720	-

Fleet Type	Always-On Fleet Total Cost	On-Demand Fleet Cost Total Cost
Monthly streaming cost	$ 72	$72
Monthly user fee costs	$ 35	$35
Total monthly cost estimate	$ 107	$107
Annualized cost estimate	$1,286	$1,286
Effective monthly cost/user Estimate	**$ 1.34**	**$1.34**

My Estimate Info

Add service | Add support | Add group | Action ▼ | **Save and share**

First 12 months total	Total upfront	Total monthly
359.90 USD	353.90 USD	0.50 USD

Services (1)

Amazon EC2
Region: US East (Ohio)

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Quick estimate

Operating system (Windows Server), Quantity (1), Storage for each EC2 instance (General Purpose SSD (gp2)), Storage amount (5 GB), Instance type (t3a.medium)

Upfront: 353.90 USD
Monthly: 0.50 USD

<u>Timeline/Implementation Schedule</u>
- August 2020 – Establish image for virtual machines
- August 2020—Stand up EC2 instance for licensing server
- August 2020 – Installation and implementation
- August/September 2020 – Testing and User acceptance

<u>Previously Funded STEP Projects</u>
- *Expansion of Digital Signage*. Fall 2015. Nadine Bayard.
- *FGM 207 Interactive Classroom Enhancement.* Fall 2016. Nadine Prendergast.
- *Financial Services & Business Research Lab.* Fall 2016. Nadine Prendergast.
- *FGM 102 & 214 Interactive Classroom Enhancement.* Fall 2017. Nadine Prendergast, Mohammed Zubair.
- *FGM 215 Interactive Classroom Enhancement.* Spring 2018. Nadine Prendergast, Sara Casiday.
- *FGM 208 Active Learning Classroom Enhancement*. Spring 2019. Phuc Tran, Daniel Hulin, Dr. Lise Anne Slatten and Heather DeValcourt.
- *FGM 204 Interactive Classroom Enhancement*. Fall 2019. Dr. Lise Anne Slatten and Heather DeValcourt