Proposal: CIS Student Remote Virtual Machine Server

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Intro:

Computer Information Science students at Vermont Technical College have a need for virtual machines throughout their education. However, not every student has the system resources to host a virtual machine. Currently, at Vermont Tech, there is no virtual machine server where students can log in, and spin up a machine to use for their studies. This project seeks to fill this gap and provide a service to students. They will be able to access a webpage and log into a protected page. There, they will be able to select a virtual machine, an operating system, and create it. After this, they will be able to remote into their new machine. This will give them easy access to virtual machines, without utilizing their own system's resources. Currently, there are several free bare-metal hypervisors that include web interfaces. These web interfaces include APIs; our end goal will be to create our own web application that utilizes these APIs, enabling specific user permissions.

Project Description:

In this project, we will create a virtual machine server that allows users to create and configure virtual machines via a web interface. They can then remote into this virtual machine and use it for their CIS classes. The expected server will allow students to log in via a password-protected web interface where they can then select a configuration for the virtual machine that they need. Once the student has selected the hardware and software configuration for their virtual machine, the server will start a virtual machine with the selected setting. The student is then able to remote into the virtual machine that they created and use the machine as they would any other virtual machine.

To properly allow the student to use the virtual machine the application will need to properly configure the hardware and networking settings that were selected and start the virtual machine.

Similar Products:

There are multiple similar products that do many of the same things that we are looking to do with our project. Products like Nitanix AHV Virtualization, VMware vSphere, Citrix DaaS, and Proxmox all have the ability to create and manage multiple virtual machines. The main difference that many of these products have that will be solved with our project is the price of these products. These products are enterprise solutions and can cost tens of thousands of dollars in some cases. The next thing that is different about our project will be the ability for a user to create and use a virtual machine without accessing having the ability to access the other virtual machines running. Many of these similar products do not have the ability for a user to configure and use a virtual machine without also being able to access all of the other machines running.

Deliverables:

The following are the deliverables for this project:

- Server running a bare metal hypervisor connected to its web interface
- Custom permission-based web interface to control the existing off-the-shelf web interface allowing users to create and configure virtual machines
- Documentation of complete project including testing
- Three required presentations and required course documentation