Implementing the right secure virtual apps and desktop solutions enables IT to centrally control your virtual lab environment or connect students to physical lab equipment remotely.

The many questions and concerns that colleges and universities express to technology partners can be summed up in just a few words, according to Citrix Education Evangelist Todd Smith: “How do we stay agile without breaking the bank?” There are, of course, multiple aspects to that:

Campuses want to make sure they’re limiting the number of students who are packed into classrooms or lecture halls, which means encouraging them to use remote learning as much as possible.

Access to programs and data for the purposes of collaboration, research and other scholastic activities should be easy and, preferably, multi-factor. There are highly secure alternatives to virtual private networks that should be considered.

Any solutions—including industry-grade software—should be able to run on any device—especially the popular endpoints that students already have, without forcing them to acquire new devices.

IT requires institutional systems to be protected against unauthorized access while still giving users entrée to the right applications. A zero-trust approach with built-in intelligence should be a strong consideration here.
Finally, the plan has to be better formulated than it was at the outset of the coronavirus pandemic, so that the institution isn’t left scrambling should students have to be sent home again.

“These considerations don’t even touch on the most important goal,” asserted Smith. “Making sure students stay on their journey without getting sidetracked is crucially important.” As he noted, “The minute a student starts falling behind, often, the tendency is to just give up. Not only does that have a huge financial impact throughout students’ lives, but also it has an emotional and psychological impact.”

The Role of the Remote Lab

That’s why the use of remote lab environments needs to be a part of the planning. “IT needs to be able to virtualize an application and securely deliver it to whatever user on whatever device when they need it and for as long as they need it. And you want to be able to do these things in a mindful way while maintaining a consistent and manageable cost model,” suggested Smith.

How do you choose? Kathy Holoman, Citrix senior product marketing manager and vertical marketing subject matter expert, advocates the use of an

A Better Virtual Experience

The University of Sydney, with 80,000 students, faculty and staff and 22 locations, has survived a heck of a year. It started with the Australia bush fires, shifted to epic flooding, and then COVID-19 struck. While many students were able to remain on campus, a large number moved to online learning, setting the university up for serious challenges. Within the span of seven days, however, the IT organization spun up a Citrix Workspace and Virtual Apps & Desktops environment that would enable people to gain access to 100-plus course programs from anywhere, including home. “The feedback they heard from students was unexpected,” said Kathy Holoman of Citrix. “The virtual experience working with professional-level statistical applications, for example, “proved significantly faster” than that of physical desktops in the computer labs.”
Maintaining Course Cadence

When the 26,000-student community at Long Beach City College went into shelter-in-place mode, the commuter college was left with 30 computer labs sitting idle at its two campuses. Leveraging Citrix Virtual Apps & Desktops enabled students to connect to the physical labs for access to software for graphics design, video editing, CAD and other high-performance, high-demand applications they needed for their classes, no matter what kind of device they were working from—tablet, PC, even smartphone. IT used Citrix Analytics for Performance to monitor site performance metrics and stay on top of user experience issues before they became problematic. As Todd Smith from Citrix noted, students “were able to connect in and maintain their cadences throughout their education journeys so they weren’t falling behind.”

The Citrix Toolbox for Virtual Lab Delivery

**CITRIX WORKSPACE** is an overarching solution that facilitates virtual delivery of applications. The following components are part of Workspace:

**CITRIX VIRTUAL APPS & DESKTOPS**, to facilitate delivery of the user’s virtual experience, no matter what kind of computing device they’re on, no matter what software, no matter where the software they need to run is located (on-premise or in the cloud).

**CITRIX ANALYTICS FOR PERFORMANCE**, for management and monitoring of the end-user experience.

**CITRIX ANALYTICS FOR SECURITY**, for assessing, detecting and preventing risks in real time.

**CITRIX CONTENT COLLABORATION**, to allow groups of users to share, access and collaborate on content.

**CITRIX ENDPOINT MANAGEMENT**, for bringing details about all applications and end-user machines into a unified view for more efficient and far-reaching device management.

**CITRIX REMOTE PC ACCESS**, a component of Citrix Virtual Desktops for enabling users to gain remote, secure access to the network and providing centralized visibility of the environment to admins.

evaluation “cheat sheet” that covers three points: experience, security and choice.

“Experience is how the students interact with technology. You want something that will set up no barriers to entry for the users,” she said. “You want an approach that secures the environment from the point of access all the way through the user session and even beyond. If a device is stolen or lost, virtualization alleviates the worry of having the information live on the laptop, meaning there’s nothing that’s going to be compromised there. And if you look at choice, think any place, any time, any network, any device.”

While the pandemic may have forced higher education institutions to temporarily batten down on allowing students on campus, that doesn’t mean they need to forsake their mission. Smith alluded to an urban institution that for years had discouraged students from crossing the campus at night. But as an effective alternative, it allowed students to check materials out from the library and had security professionals drop off books to dorm rooms during their rounds. “That’s similar to what Citrix does in helping colleges and universities,” he said: “We’re giving students access to resources without making them leave where they are. Students get access to anything from anywhere on any device. This gives IT peace of mind.”
DO'S

5 Essential Do’s and Don’ts of Running Labs When Campus is Closed

Citrix experts Todd Smith and Kathy Holoman share key do’s and don’ts for developing your college’s virtual lab plans for the new academic year.

1. **DO prepare for on-campus/off-campus usage.**
   Since nobody’s certain what the coming months will demand of colleges and universities and how their students will be learning, leaders are preparing for a hybrid mix—on-campus and remote learning. “Students are going to be taking classes in the fall. That much has been decided,” said Todd Smith, education evangelist and senior sales engineering manager for Citrix. “Everything students can do on campus, they need to be able to do remotely too. Higher ed institutions have already invested in a lot of expensive purpose-built computers that sit in physical lab environments within the college. They need to come up with a way to provide students access without forcing them to be in the physical labs where the devices are housed.”

2. **DO anticipate increased usage.**
   “That doesn’t mean you’re limited to the same number of physical devices,” Smith asserted. “How does that work? By leveraging virtualization technologies, you can multiply the reach of the labs by scaling out the solution to handle more users than the physical labs accommodated.”

3. **DO consider setting usage policies.**
   To conserve your lab resources, use policies to limit access to the virtual versions. “For example,” said Kathy Holoman, senior product marketing manager for Citrix, “If it’s a graduate-level lab and you’re limited on the number of licenses you have, set policies to make sure that the user holds the student ID is registered as a grad student versus an undergrad student.”

   “Likewise,” added Smith, “you can use policies to restrict the times when students have access to resources or limit what kinds of
endpoints can be used, to make sure it’s secure and has the latest antivirus software on it. Also, you can apply policies to restrict printing, control clipboard use for cutting and pasting, or prevent unauthorized data offloads, stopping students from plugging a USB drive into a device and downloading files from that device, whether it’s sitting in the lab on campus or on a table at home.”

**DO put security front and center.**

“One way to do that is to require multi-factor authentication,” Smith advised. “Force students to use more than a user name and password to connect to your remote or virtual labs. We see this an awful lot in education when it comes to things like research projects within universities. You shouldn't be able to log in with just your student ID. You should need your student ID and the code we text you to make sure you are who you say you are.”

“Also, use intelligent analytics to alert you to anomalies in behavior and mitigate risk without disrupting the student experience,” advised Holoman. “Citrix Analytics for Security applies machine learning to implement ‘risk scores’ for gauging atypical user characteristics or actions that could lead to network compromises. Citrix Analytics autonomously identifies, flags and/or mitigates issues on the fly.

**DO pay attention to the user experience.**

Students care a lot about what their graphics look like, what their response times are, how responsive the software is to their keyboard and mouse actions. IT pays attention to elements like memory usage and disk space, which have an impact on the user experience. The right virtual software lets administrators anticipate potential issues before they surface for the user as problems. Then those findings can be reported back to the user: “Your home WiFi is getting overburdened; expect some poor performance while you’re working on this application....”

“That kind of reporting can eliminate a call to the help desk, because we’ve already told them, ‘Expect to have some performance issues, because you’ve got a bunch of other things going on,’” Smith said. “The service works so well that some Citrix commercial users determined that their ISP had an outage before the service provider is even aware of the problem.”
DON'T limit student devices to what works for you.

The typical computer lab is homogenous. That's not the situation for your students' systems. The solution you set up needs to be able to deliver all of your applications in a mixed environment that reflects the variety of devices your students use. By providing a virtual desktop, you eliminate the impossible task of installing heavy-duty applications onto student equipment while taking advantage of the infrastructure you already have in place.

DON'T invest in single-use anything.

"Why invest in something that is limited or restricted in the way it can be used, where the investment becomes almost a cost burden?" asked Smith. "Just as schools are moving away from building out rooms with single uses, the use of subscription-based licensing is more in tune with the way institutions now prefer to consume services. They don't want to have to buy something in case someone's going to use it. They would rather buy what they need and then add more based on actual usage," he said. "And while they’re at it, they want to be able to tie it back to what students are accessing and why, and charge based on facts. That’s the reason there’s a lot of this movement toward virtualizing labs and virtualizing resources."

DON'T waste time on manual lab management.

The prototypical computer lab requires a lot of configuration and setup, suggested Smith. The same could be said for individual student accounts that are connecting to those lab resources. Obviously, any IT admin would prefer a method for making a single change to a given role and having it apply throughout that group of users. "Scalability becomes a critical concern," he said. That applies to helpdesk and support operations too. "You want to do those common tasks—password resets, unlocking accounts—quickly and en masse. Regardless of what users and devices, where they’re coming in from or what they happen to be on, by moving your management infrastructure to the Citrix cloud, you get one place to manage your entire environment—one single console to manage user experience, applications, services, data and desktops."
DON'T be stymied by licensing complexity.
Every application vendor follows its own licensing model: campus-wide, per-individual or concurrent usage. That's further complicated because licenses can be checked out to a user, device, session, server or appliance. In a remote education scenario, the last thing you want is for a hundred students to quickly connect to a given program and have the 101st person and everybody else who follows get a “Sorry, we’re full up” message. By using the License Server built into Citrix Virtual Apps & Desktops, you can automate license management, said Smith. The use of Analytics for Performance simplifies the job even further by providing the ability to monitor how many licenses are being utilized—and not only licenses but also connections to those applications. That kind of reporting is invaluable for planning and for negotiations during renewal.

DON'T believe outdated assumptions about computer labs.
“Education customers aren’t always aware of all of their options for providing virtual labs,” observes Smith. “They assume the machines always have to be on, waiting for someone to anonymously connect, which opens up the potential threat of security breaches.” The use of Citrix Remote PC Access allows IT to power machines on and off as needed. Another myth is that a one-to-one relationship is required between on-site and remote machines. “You have to buy numerous products to make this work,” he added. “With Citrix Virtual Apps & Desktops, you have the flexibility to either virtualize the lab environment or connect to existing physical lab equipment, delivering a consistent, familiar experience to students using a host of different devices.”