

Achieve learning continuity and keep students productive with remote access

Best practices, technologies and real-world examples to maintain learning when students and faculty can't get to the classroom

Schools can experience substantial learning disruption when unforeseen events keep students and staff from reaching campus.

Fortunately, schools can deploy new IT solutions that provide unhindered remote data and app access, BYOD functionality and continuous network security – enabling students to continue their work wherever they are and ensuring that learning outcomes are met. For this to work, students, teachers and parents need to adopt learning continuity plans to establish roles, procedures and shared goals.

Flu season rears its head whether we like it or not. Snow days can turn into snow weeks.

From acts of nature to athletics playoffs and lost mobile devices, there are plenty of disruptions that can turn semesters upside down for students and teachers alike.

In the past, most schools have simply had to accept the inevitability of these disruptions. Teachers and administrators cope as best they can, but that interferes with curricula and makes it difficult for them to reach the learning outcomes they've set out to achieve. Today, however, education IT teams are increasingly taking advantage of virtualization and mobility technologies that enable BYOD

and remote access so students can stay engaged and productive, even when they are not able to get to campus.

This paper addresses the kinds of learning disruptions that come up regularly and take their toll on student achievement. It presents an approach to learning continuity based on mobility and remote access that keeps students engaged and the apps and data they depend on up and running. Our topics include:

- Best practices for a complete learning continuity strategy, including team structure, learning continuity planning, testing, communications and awareness programs
- A technology approach to provide seamless remote access to apps, data and collaboration services during any kind of learning disruption, and enable IT to protect and control data accessed from any location on any device
- Real-world examples of five institutions that have already implemented highly effective remote-access systems and protocols

The importance of learning continuity — and the challenges it poses

Whether planned or unplanned, learning disruptions that aren't managed effectively can snowball. Lost work time sets students back relative to their peers and can require changing lesson plans on the fly, leaving them unprepared for critical exams and even requiring lost school days to be made up over the summer or holidays.

Traditional education IT is often unable to alleviate the problem. Computer labs around campus don't serve students who can't make it there; teachers don't benefit from apps when they can't access them.

But new IT solutions can create fully functional mobile learning environments that students can use wherever they are, on any device. These environments enable entirely new, adaptable workflows and protect the important continuity of lessons and homework:

- App and desktop virtualization allows access from any device, anywhere – from a home desktop, a mobile device on a bus or a tablet in a library.
- Schools can organize virtual snow days or sick days, allowing students to keep their momentum and positioning them better when they return.
- Replacing lost or inaccessible devices is less urgent, since a substitute device can be used in the interim.

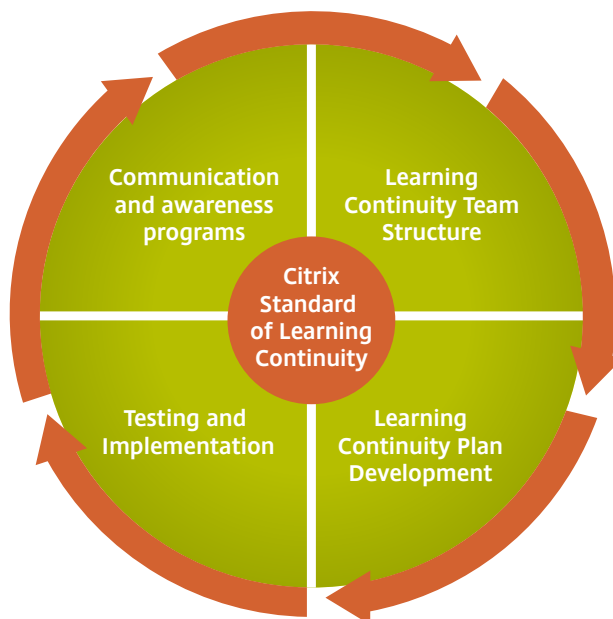
- Software updating and app configuration are non-issues, since data is managed centrally by IT and distributed to each device without the need for hundreds of local installs.
- Students and teachers grow accustomed to working virtually, lessening the shock of any particular learning disruption.

One important benefit of adopting a mobile solution is that it works well with the way students learn. Today's learners prefer not to be tied to a computer lab to complete assignments. They're on the go, and they own, on average, two to three mobile devices. Often, they prefer to use them instead of something provided by their school. Moreover, removing access barriers encourages students to explore – which will always be one of the richest parts of their learning.

A planned approach for your learning continuity strategy

Although disruptive events can take many forms and many decisions will always have to be made on-the-fly, a learning continuity plan provides a framework and preparation to guide decisions, and it clearly indicates of who will make them.

Any workable plan starts with gathering support and creating a shared vision. Having buy-in from schools' diverse stakeholders – students, staff, administration, parents and high-level decision-makers – is essential for producing a workable, sustainable plan.



Starting the planning process

At a high level, a learning continuity plan should identify potential disruptions – both frequently recurring ones, like extended student sicknesses, and rarer scenarios like school closure due to storms – while trying to keep the number of scenarios manageable. A learning continuity plan is only effective if all stakeholders can understand it and feel ownership of it.

Learning continuity team structure

One of the top considerations for a learning continuity plan is the development of a clear decision-making hierarchy. These plans naturally extend across functional lines to include not just teachers and administrative leadership, but also IT. Students, too, should be considered valuable advisors in an initial planning phase, since bringing in responsible student leaders – who can eventually serve as “on-the-ground” advocates – can offer unique perspectives and ease buy-in later on.

Personnel identified as key members of the learning continuity teams should remain focused

and involved from start to finish. In addition to ensuring that the plan is effective and workable technologically, this helps build momentum and awareness on campus.

Learning continuity plan development

Stakeholders should think and plan holistically – look at the entire system, not just their own roles within it – and ensure that the usage expectations and technical support are in line for all. Any user role (teachers, for instance) that gets left out is a potential vulnerability of the system.

Good plans will cover common need cases and standard protocols, as well as lay out available resources for users who have questions or issues. Any IT paradigm shift, such as what’s required to embrace distributed devices and mobile access, requires shared understandings and expectations so that each plan developer can be an advocate and resource in his/her respective segment of the school community.

Testing and implementation

Testing should involve various user segments, since one user's needs won't necessarily match another's, and one user's habits won't necessarily expose all system vulnerabilities. Because of the ever-changing nature of mobile use and devices, managers should expect frequent refreshes of supported systems. Compatibility issues tend to be a nonissue – Citrix solutions are universally compatible with nearly any device students might bring with them – but it is worth spending time educating users on the specific characteristics or needs of their platforms and reminding them to update their own equipment.

As a matter of maintenance, yearly tabletop demonstrations and Q&A sessions should be offered to new students and staff, as well as those wanting a refresher. Preemptive problem-solving will save technical support time in the long run.

Communications and awareness programs

Adaptive plans of any type are only as effective as their internal and external communications. Communication is crucial to ensure adoption and awareness, and bad communication can cause unnecessary delay and complication when, for example, students faced with unexpected absences are unsure of how to utilize the mobile systems on their own devices.

Learning continuity planning checklist

Learning continuity team structure	<ul style="list-style-type: none"> • <i>Secure</i> leadership buy-in • <i>Form</i> core continuity team with all stakeholders represented (students, teachers, administrators, parents, IT)
Learning continuity plan development	<ul style="list-style-type: none"> • <i>Develop</i> common use scenarios and needs • <i>Define</i> decision-making hierarchies • <i>Develop</i> IT solutions with vendor • <i>Build</i> an implementation and rollout strategy
Testing and implementation	<ul style="list-style-type: none"> • <i>Choose</i> small test user segments for soft rollouts • <i>Test</i> scalability and device compatibility* • <i>Perform</i> tabletop exercises and walkthroughs* <p>* Annually at minimum</p>
Communications and awareness programs	<ul style="list-style-type: none"> • <i>Establish</i> formal rollout and ongoing communication programs • <i>Identify</i> stakeholders and best communication frequency • <i>Assign</i> communication channels as appropriate for audiences • <i>Draft</i> communications and update yearly • <i>Schedule</i> and deploy communications

The communications team should work to convey a consistent message to users via channels that work for them – such as morning announcements, student newspapers, teacher bulletins, and campus-wide email or text. Parents should also be notified, since they will be the ones best positioned to facilitate remote work when their children are away from school.

Ensuring learning continuity with Citrix technologies

Citrix technologies can be the solution for ensuring continuity of operations during learning disruptions. These IT tools are built around several important capabilities:

- Provide people with seamless access to their apps, data and collaboration services during any kind of learning disruption, planned or unplanned
- Protect and control sensitive information accessed from any location and on any device
- Simplify systems by embracing BYOD, eliminating the limitation of on-campus computer access

Below are the main components of such a setup. Citrix solutions for education provide scalability and complete compatibility, no matter the scope of schools' needs. These tools have been proven in school deployments across the country (see case studies below).

Windows app and desktop virtualization powered by Citrix XenDesktop and Citrix XenApp

IT can transform Windows apps and complete desktops into on-demand services available on any device, in any location. Because apps and data are managed within the datacenter, IT maintains centralized data protection, compliance, access control and user administration no matter the method of access. A unified app store provides students with single-click access to mobile, web, custom and Windows apps, including integrated file sharing and productivity apps.

Secure access and visibility

powered by Citrix NetScaler

Instead of having to worry about special access methods, IT can allow users to access their applications, data and desktops with any available connection – school LAN or WAN, consumer broadband, satellite, public hotspot or mobile – with full security, access control and compliance monitoring and tracking. A unified management framework lets IT secure, control and optimize access to apps, desktops and services on any device.

Enterprise mobility management

powered by Citrix XenMobile

IT gains identity-based provisioning and control of apps, data and devices, automatic account de-provisioning and selective wipe of any devices that have been used temporarily during a learning continuity event. School apps and data, whether developed by IT or a third party, reside in a container, separated from personal apps and data on the device.

File sharing

powered by Citrix ShareFile

People can securely share files with anyone and sync files across all their devices. Flexible storage options, policy-based control, reporting, data encryption and remote wipe help keep school content secure when learning disruptions occur.

Collaboration and remote support

powered by Citrix GoToMeeting, Citrix Podio and Citrix GoToAssist

Teachers, staff and students can initiate or join meetings from anywhere in seconds, on any device, with HD video for true face-to-face interaction. Social activity streams, custom apps and collaborative workspaces help people work together more effectively – on faculty initiatives, collaborative student research projects and so on – when disruptions keep them apart.

Together, these Citrix technologies help schools address two essential considerations for users:

Can I still access my applications, data and files, and collaborate effectively with others on already-running school work or initiatives?

Does everything still work the same way as usual, or do I need to adjust to an unfamiliar device, network access method and set of tools?

Key benefits of supporting learning continuity through remote access

The primary benefit to adopting such a system is the most obvious one: learners are empowered to continue their work, keep pace and reach education outcomes. But the benefits to the entire school organization go well beyond that.

Efficiency and cost savings

Mobility and remote access are already top priorities for forward-thinking schools. Embarking on learning continuity planning increases the value of these investments, and educational institutions also find that embracing anywhere access and BYOD generates substantial financial savings. For example, one public school district saved an estimated \$1.2 million over 10 years (see case study, below) by eliminating old-style computer lab infrastructures and embracing Citrix IT solutions like the ones outlined above.

A seamless experience for teachers, staff and students

Because users access their resources the same way no matter the device or location, there is no need to learn alternate procedures. Consider the surprising amount of resources it takes to train users on learning software. Citrix technologies allow people to work the same familiar way during learning disruptions as they would any other time.

Security and compliance

During a learning continuity event, data and apps are delivered using the same infrastructure as for routine operations, with the same inherent security. Windows applications remain under IT control in the datacenter no matter what users are doing or where they are.

Less disruptive disruptions

While never desirable, learning disruptions become less disruptive with these systems in place. This preserves students' momentum with their studies, but it also frees resources by lessening the quick-reaction and planning burden on teachers and administrators. Users and overseers can take disruptions in stride and focus on the most important part of their job: learning and achievement.

Datacenter continuity: maintaining continuous IT operations

School IT departments are already strapped for resources. These IT solutions cut the workload of IT administrators and allow them to focus on other matters. The centralized data management afforded by this new anywhere-access paradigm also provides IT with newfound simplification and security across the entire organization.

Five school successes in adopting remote access

“The Citrix team helped us quickly get the full environment up and running. It was an easy rollout and the process couldn’t have been any smoother.”

—Jonathan Urbanski,
Network Manager, Maine
Township High School
District 207

Maine Township High School District 207 Illinois

Maine Township High School District 207 was recognized by the U.S. Department of Education as being among the nation’s best, but the district still faced the challenge of modernizing its IT under financial constraints. Leaders deployed Google Apps for Education, allowing students at its four high schools to access hosted productivity tools using lightweight Google Chromebook devices. Citrix has developed a powerful partnership with Google that makes this integration possible.

“Our goal was to create a fast, reliable and secure information technology experience that can transform learning, collaboration and teacher innovation,” says Henry Theile,

assistant superintendent of technology and learning for Maine Township.

“Students enjoyed that they never had to worry about which computer they used or whether their files were saved in the right place,” says Theile. Due in part to a seamless rollout, the district extended this ubiquitous access to its 700 faculty members as well. In addition to Google Apps, the teachers were provided access to Windows-based productivity applications.

Key results:

- Provided enhanced, consistent user experience across devices and locations
- Reduced IT downtime and workload
- Decreased costs of devices and tech support

Shelton Public Schools Connecticut

Shelton Public Schools operates four K-4 elementary schools, one upper elementary school, one intermediate school and one high school. The school district boasts a great deal of socioeconomic diversity in its student body.

By running XenApp, which fully supports Google Chromebook devices as endpoints, the school district now provides its teachers and students access to everything from Google Drive to Microsoft Office. If students wish to switch from Google Docs to Microsoft Excel, they can simply log into XenApp and pull up a Windows-based desktop for a seamless transition.

“Although teachers and students were adapting to the Google Chrome operating system, they still missed the familiarity of a Windows-based operating system,” says Daniel DiVito, Director of Technology at Shelton Public Schools. “That’s where XenApp comes into play. By partnering with both Chrome and XenApp, teachers and students can toggle back and forth.”

Key results:

- Saved more than \$1.25 million in hardware expenses over 10 years
- Addressed socioeconomic disparities among students by providing Google Chromebooks and remote access to apps
- Supported differential learning practices with affordable in-class devices

York County School Division Virginia

Before technology flooded the classroom, students and teachers had no barriers to working, learning and planning at home. But technology changed the learning process.

“We started tying teachers and students to the classroom,” says Douglas Meade, York County Schools’ director of information technology. Students had to come to school to access applications, and in some cases, specific computers where larger applications were installed. Teachers had to be in the classroom to access the student management system and gradebook, lesson plan applications and assessment tools.

Today, teachers and students need access anytime, anywhere and on any device, as well as access to any application, file and database. With Citrix XenDesktop, York County School

District delivers this comprehensive access and much more. “This is a ready made technology for the K-12 environment,” says Meade. “It restores the natural learning process.”

And the virtualized environment is always accessible, even when the classroom isn’t. From construction delays to a hurricane-induced power outage to a Windows 7 migration, the district’s virtualized environment has proven time and again that productivity and learning don’t stop at the classroom.

Key results:

- Returned to “natural learning” – decoupling learning from hard-to-manage, onsite computers
- Retained full functionality through construction delays and a natural disaster
- Implemented scalable Citrix solutions to meet the different needs of its different users

“And we realized: This is providing us a way to keep supporting instruction, to keep and maintain continuity in instruction...”

—Didier Contis
Director of IT Services for
the Georgia Tech College
of Engineering

Georgia Tech College of Engineering

Georgia Tech College of Engineering students were hungry not just for mobile access to apps and desktops, but also for a new IT paradigm that enabled them to use heavy-duty software applications free from processing-power constraints. Citrix solutions provided both.

Didier Contis, Director of IT Services for the Georgia Tech College of Engineering, has shepherded the IT paradigm shift on campus. “Computer labs tend to be highly inefficient resources,” he says. “From a usage point of view, you have too many resources at the beginning of the semester and in the summer, but you don’t have enough resources at the end of the semester when students are rushing to finish a project.” So the college moved away from antiquated labs and toward full data mobility.

Along the way, the IT team gained surprising successes. One student, Contis recalls, was based in Australia in 2011 and required access to applications via a meager 3G connection. With the staff bandwidth freed up by their XenDesktop setup, Contis and his team were able to create a custom solution for the student.

“And we realized: This is providing us a way to keep supporting instruction, to keep and maintain continuity in instruction,” Contis says.

Key results:

- Eliminated traditional bottlenecks at onsite computer labs
- Embraced mobility without compromising access to resource-heavy applications
- With newly freed IT resources, created customized solutions for users with unique challenges

University of Florida

Leveraging the flexibility of Citrix XenApp, XenDesktop, Receiver and NetScaler, the University of Florida – alongside two of its state-school neighbors – developed solutions that fit its unique needs, making applications available to students and faculty anywhere, anytime and on any device. Students responded hungrily, using the system to finish projects during spring break and logging in from locations around the world.

“What we found,” says Jameson Johnston, IT manager, “is that people have actually logged

in and used UFApps from 47 or 48 states and close to 100 different countries.”

Key results:

- Achieved true anytime access, demonstrating that students will log in over spring break and other holidays
- Opened an entirely new pipeline for international and remote students to access learning resources
- Achieved real innovation in resource-strapped, slow-moving higher education systems

Conclusion

The essence of learning continuity is to minimize the impact of disruptions on students, staff, families and the IT resources they rely on. In the past, schools have had to accept lost time and reconfigure semester schedules as best they could, taking time away from other work and creating substantial stress and disarray.

Remote access technologies provide a better approach, allowing seamless instruction, homework and research – even if location or devices have completely changed. Dependable access to apps, data and collaboration services help all parties involved stay productive and meet already-burdensome curricular benchmarks. Because IT can protect and control

data and apps accessed from any location and on any device, security is continuous.

Many districts are already focused on integrating data mobility into their curricula and leveraging students' natural affinity for distributed access and learning. Those that incorporate these capabilities into a solid learning continuity strategy can mitigate the risks posed by planned and unplanned disruptions – preserving the ultimate goals of great teaching and learning.

Please visit www.citrix.com/education to learn more about the role of Citrix remote access technologies in learning continuity.

Additional Resources

- [Citrix Mobile Workspaces for Education](#)
- [A Tale of three universities: Increasing access, engagement and learning](#)
- [York County Schools Enables Anywhere, Anytime Learning with Citrix Solutions for Education](#)

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About Citrix

Citrix (NASDAQ:CTXS) is a leader in mobile workspaces, providing virtualization, mobility management, networking and cloud services to enable new ways to work better. Citrix solutions power business mobility through secure, personal workspaces that provide people with instant access to apps, desktops, data and communications on any device, over any network and cloud. This year Citrix is celebrating 25 years of innovation, making IT simpler and people more productive. With annual revenue in 2013 of \$2.9 billion, Citrix solutions are in use at more than 330,000 organizations and by over 100 million users globally. Learn more at www.citrix.com.

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