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Networks for Next-Generation Digital Learning

HIGHLIGHTS

- Create the networks needed for uninterrupted, school-wide digital learning
- Future-proof investments by adopting simple to scale, software-enabled network solutions
- Prepare for next-generation digital learning tools and applications

Enabling the Digital Learning Evolution

The network decisions and solutions deployed today must address immediate issues, but with an eye to an ever-changing future. The possibilities may seem endless; but resources and budgets are not. Federal funding for technology investments cannot be relied on to cover significant revisions or wide scale "rip and replacement" of network infrastructure, as focus shifts to funding more digital platforms, materials, and more digital "out-of-class" access.

Deploying networks based on open standards, scale, and flexibility simplifies the integration of best-value, best-of-breed solutions to support future needs. To provide such cost-effective scale and flexibility of management as well as network scope and capacity, K-12 IT providers should look to evolve their network infrastructures towards more software-enabled programmable designs.

Software-enabled Networks for Tomorrow's Students Today

As K-12 digital learning evolves, the impact will likely be felt first in the wireless environment. As broader trends such as the Internet of Things (IoT) increasingly have value in education, the wireless network will need to support multiple services that far excel the demands of current BYOD solutions.

Gartner estimates that 20.6 billion IoT devices will be in use by 2020 and use cases such as IoT-enabled lighting, HVAC, and building management could offer considerable value to K-12 school districts looking for operational efficiencies. The impact on the wireless infrastructure and potential security implications, however, needs to be considered in advance.

While end-to-end Software-Defined Networking (SDN) may not be on the near-term horizon for the vast majority of school districts, the role that SDN will have in delivering digital learning in the future is impressive. However, to utilize innovations such as IoT, virtual reality, and more extensive OER services with the resources and budgets available, automation and orchestration of network functions and processes will become critical. SDN provides that type of automation and orchestration, enabling

advanced instructional platforms, digital learning systems, and the network to work in concert with each other with minimal IT involvement.

SDN can also put advanced network control in the hands of those who need it most—the teaching staff. By orchestrating the individual elements of the infrastructure around specific tasks without IT staff involvement, SDN can enable real-time in-class feedback, restrict or enable limited internet access, and pull resources together for more engaging instruction based on individual students' needs.

An Infrastructure Optimized for Digital Learning with the Brocade Ruckus Edge Networking Product Family

As wireless infrastructure solutions are evaluated, capacity and coverage capabilities are typical primary concerns. However, two other factors should be considered and those are continuity and longevity. By ensuring the solutions they deploy are highly interoperable and SDN-ready, IT leaders are addressing the longevity issue by future-proofing their investments. For those wanting to examine what SDN could do to ease management, the Brocade® SDN Controller and related applications are already available for trial and testing, delivering solutions based on some of the most widely adopted open SDN standards.

However, efforts to be future-ready must not constrain efforts to deliver continuity today. A 2016 Education Week survey[1] illustrated that 47 percent of teachers surveyed had at least one day of wireless network downtime in the previous

semester. That downtime translates into lost productivity and skepticism from the educators when transitioning to digital learning.

Ruckus™ solutions provides a number of features from the Access Point (AP) to the client to enable an uninterrupted learning experience. Ruckus Beamflex™ adaptive antenna technology mitigates radio interference, noise, and network performance issues, and improves application flows. The results include:

- Increased performance and range

- Maximized power efficiency

- An excellent digital learning student experience

In addition, Ruckus SmartCast™ algorithms automatically schedule and pre-queue traffic in software on a per-client basis. With per-client queuing, SmartCast is ideal for digital learning over Wi-Fi applications because it ensures disruptive clients don't negatively affect the performance of others clients on the network.

Nothing can disrupt the digital learning environment more for a student than a lost, misplaced, or stolen device. With Ruckus SPoT™ location-based services, locating and getting the device back in the hands of the student is accomplished within minutes, thereby limiting disruption.

Virtualized Function Networks (VNFs) help optimize the use of cloud-based platforms and Infrastructure as a Service (IaaS) models, and their agile nature means they can be quickly and easily redeployed in different network environments as needed, offering vastly improved utilization of

physical devices already acquired as well as considerably lower TCO for physical appliances. The Brocade vRouter is an ideal solution for K-12 environments, offering the power, resilience, and functionality of a network router in a virtual form, while providing enterprise-class control at a fraction of the cost[2].

For schools looking to offer Web-based access to Open Education Resource (OER) materials, Brocade virtual Application Delivery Controller (vADC) solutions can optimize and protect Web applications to ensure access and availability. Automating and simplifying management of peaks in demand means administrative and educational application requirements are balanced to avoid application failure or slow performance.

Delivering a Digital Learning Transformation

Digital learning is about more than the instructional platforms used, and is constantly evolving. Federal mandates and the changing needs of students are driving demand for digital, Web-based—preferably mobile-optimized—instructional solutions and educational content. By adopting the right network infrastructure today, K-12 IT teams can deliver the connectivity, security, and scale required while reducing the management burden and cost of running such systems.

LEARN MORE

- *Huntington Beach*
- *Software-Defined Networking in the Campus Network*

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[1] http://www.gartner.com/newsroom/id/3165317.

[2] Education Week Research Center, *Wi-Fi Woes: How Mediocre Wi-Fi Interferes With Instruction In American Schools – February 2016*.

These solutions are already enabling K-12 institutions, school districts, and IT suppliers across the world to deliver world-class digital learning experiences and support to improve student outcomes.

To join them, visit https://www.ruckuswireless.com/solutions/primary-education.

To learn more: Read our white paper: *Future Ready Networks for Education Technology*.

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