Building the future of higher education at the edge

Higher education institutions often have a dual mission. They educate the next generation of leaders. They also create new knowledge through research.

While these missions have many overlaps, they are often distinct in the technology resources needed. For instance, the instructional technology that students and faculty rely on daily is unique from the capabilities required for climate simulations or other major, data-intensive research projects. However, building two distinct IT capabilities on every major college campus is a costly and operationally complex proposition.

Challenge: Increase flexibility, add computing resources and lower costs

Many college campuses operate legacy data centers for their core operations. This has burdened them with all the management and upgrade issues of their corporate counterparts. Although migration to cloud services in underway, it is just one step in building a longer-term solution.

At the same time, colleges have analytical needs across their many functions. Controlling physical plants and other local activities from the cloud potentially introduces latency that could reduce effectiveness of the control logic. Elsewhere, student recruitment and retention programs increasingly operate based on insights gleaned from massive amounts of data on student performance before, during and after college. The investments in skill-sets and infrastructure to natively design, build and operate an analytics and insights capability is a costly proposition.

> Effectively operating a campus calls for deployments of the Internet of Things (IoT).

On the other side of the dual mission, research functions often deal with massive datasets requiring extensive compute, memory and storage resources. The data used in experiments and produced by experiments can serve many functions such as being shared with colleagues, rolling into further experiments or going for further analytics processing in the cloud. Transmitting all data to the cloud becomes an expensive proposition when its ultimate use might be elsewhere.

LUMEN®

Solution: Build a data base camp, add proactive security at the edge

Research data used to generate insights for analysis and action shouldn't go to waste. Using edge computing resources, research organizations can build a data "base camp" in the network to become more effective. This keeps important data near the researchers who need fast access to it. To better manage and act on data, education professionals and researchers need a solution to store valuable data that is created from digital interactions and not miss out on opportunities to improve data quality and governance.

Lumen® Storage Solutions for the edge with Network Storage and Layer-2 Ethernet connectivity enhanced by Data Access Accelerator and Layer-3 IP-VPN provides enterprise grade storage for any research program that produces a lot of data. This base camp is quite effective for those cases where data is not being consistently acquired such as experimental research.

Driven by the need to maintain consistent, predictable performance within an optimal cost structure, Lumen Storage Solutions become an extension of the campus. Once data is stored in the network, it can be leveraged in numerous ways to create further value, all while reducing the storage footprint on campus.

Securing applications running at the edge and protecting its data requires security that is built-in and automated. With our robust Web Application Firewalls (WAF), Bot Management and API Protection service – as well as one of the largest DDoS deployments in the world – our vision for Lumen security at the edge is that it's seamless, built-in, automated and informed by high fidelity threat intelligence to help protect and accelerate application experiences for our customers and their end users.

Results: Security and data flexibility for researchers

These architectures composed of Lumen Intelligent Solutions components, expertise and managed services can modernize networks and secure workloads at the edge. Consider just a few effects of this edge computing infrastructure for higher education and research institutions:

- Reduced latency for control applications and security response

- Edge-based security for sensitive data

- Lower network costs from transporting only relevant data to the cloud

- Fast access to time-sensitive research data

Edge computing approaches put data processing and storage closer to the network edge where educators, researchers and students reside.

Visit Lumen today for more information or contact a Lumen Expert for consultation to get started.

Edge computing complements both cloud computing and the IoT, creating seamless, low latency and secure solutions.

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