Higher Ed Overview

WITH THE REVENUE EXTRACTION GATEWAY

rgNets

Campus life. For many, it's their first experience with true independence, a time when focused minds absorb a plethora of academic and social inputs that will form the building blocks of their identities, personalities, and professions. It's a simple time in a young academic's life that… actually, it's anything but simple. Today's institutions of higher education are demanding and competitive environments that bring out the best in their students, educators and staff. This frenetic quest for continual improvement and knowledge drives an equally urgent demand for ubiquitous data connectivity, anywhere and everywhere on campus. And the demand for fast, reliable and secure connectivity isn't exclusively driven by the high volume of power users and their data-thirsty devices; the modern connected campus must also support massive research, security, operational and IoT infrastructures at the same time. These high demands have driven these institutions to deploy and operate some of the most robust - and complex - wired and wireless networks in the world. The sheer size and complexity of these critical infrastructures requires a unified multi-services solution to quickly and securely onboard users and their varied smart devices, to provide a personalized user experience wherever they may roam, and to keep personal devices and critical campus infrastructures properly microsegmented so that they can all operate as intended. The rXg provides these essential services and more, enabling the unified wired and wireless smart campus networks that today's academia demands.

Secure User Experience, from the Quad to the Lecture Hall to the Dorm Room

The rXg delivers network services far more sophisticated than traditional broadband gateways, giving network operators the ability to automatically provide enterprise grade security unique to each individual or group, wherever they may move throughout the property. While the guest will find familiarity with the simple login process, behind the scenes the rXg utilizes integrated eDPSK and 802.1x authentication to assign each user to a VLAN tailored to their needs and interests and - simultaneously - keeping them separated from more sensitive network assets. Guests can quickly and easily onboard all of their devices, from laptops to phones and tablets to peer-to-peer gaming devices. Once connected, many of these devices can be used by the student to control in-room IoT systems like lighting and climate control, or access secure coursework materials remotely. Additionally, with integrated billing and payment processing, the rXg provides individual students the opportunity to select and self-provision any number of service levels the operator chooses to offer; for example, any enrolled student has free access to 100Mbps wired and wireless internet access, but those who require more bandwidth can upgrade to a 1Gbps service for a nominal monthly fee or a course-validated free coupon code.

The rXg provides secure, robust connectivity for today's smart campus.

The dynamic VLANs managed by the rXg are distributed across the network infrastructure in such a way that students and staff are bound to their unique VLAN anywhere a wireless signal is present - including seamless roaming across WLAN and PLTE coverage indoors and out. The rXg essentially creates a personal area network (PAN) for each user which follows them wherever they roam; the rXg can provide the same seamless roaming experience across multiple main and satellite campuses. A student, for instance, can access their network-attached file storage from the library or student union. Or a professor can easily access her course materials for her sessions on the main campus as well as from any sessions delivered at remote campuses. And each PAN is fully secure and segmented from all other student, staff and operations devices on the property. The rXg even automates the complex IP address device mapping that enables UPnP to work flawlessly when a cGNAT block is utilized; multiplayer online gamers can connect and play their console and handheld devices without any need for campus IT staff to get involved, significantly reducing time spent providing support.

The device and user services provided by the rXg extend far beyond the student's needs. Using the same eDPSK and 802.1x authentication methods, educators can onboard their personal and institution-provided devices simply and easily, and each will be automatically bound to the appropriate VLAN. Access to critical data such as exams, lesson plans, student records - and more - can securely be limited only to those users and devices that are authorized to do so. Campus security and operations departments can similarly be automatically microsegmented from the broader network population to have access to surveillance cameras, access control systems, dispatch & push-to-talk systems, maintenance, HVAC and scheduling systems. And the same process is used to provide secure and reliable private connectivity for critical utility and IoT infrastructures.

With the rXg, today's modern smart campus not only provides robust, ubiquitous and secure data connectivity, it offers new and unprecedented increases in operational efficiency, cost savings, and campus security.

Everything in its right place, operating as it should.

Unique Location-Based Services Enhance Student Experience, Increase Campus Security

The rXg enables an unprecedented amount of additional content delivery opportunities for any number of institutional departments and organizations. Fully customizable captive portal capabilities ensure that the institution is properly represented from the student's or visitor's first interaction, as they quickly and easily join the network. Integrated location-based services can significantly enhance the campus experience, and provide additional student engagement opportunities; approved campus clubs and organizations can provide timely updates for their events, the library or a research department could promote a time-limited drop-in session for interested students within a specified proximity. And with integrated billing and payment processing capabilities, the bookstore could push flash notifications for deeply discounted merchandise that the network user could easily purchase with a single click and pick up in-store when their schedule permits.

Additionally, location-based services offer granular wayfinding, a service especially appreciated on larger campuses. When enabled, guests can quickly and easily find their location on their smartphone, and plot a path to their final destination on property.

Location-based services are not only for convenience and promotion. Proper utilization of location data can enhance the security of the campus and its people. Device location can be used to find people in the campus coverage area, and can help security personnel identify areas that need further attention or coverage - an area that shows heavy foot traffic may need additional security video, path lighting or personnel coverage, for example.

Instant Onboarding and Substantial Security for Headless Devices

Today's smart campus needs to effortlessly support large volumes of high-demand users and their data-hungry devices. In addition, the modern higher learning environment drives the increased need for connected devices not tied to a user, or easily managed and updated through traditional IT processes. These 'headless' - or IoT - devices potentially represent significant points of vulnerability for the network if not properly managed and secured. Utilizing eDPSK and 802.1x authentication, the rXg can automatically place each device into its appropriate VLAN from the moment it joins the network. Each VLAN provides very granular security options - microsegmenting device groups/types/classes with the criteria network operators find most appropriate. For example, HVAC and utility systems can be configured to be limited to specific port utilization rules and MAC address whitelists to prevent any communications beyond their intended metering/analytics/management systems. A specific VLAN can be configured to ensure that digital signage devices have one-way data capabilities, from the system's event server to the monitors installed around campus; student union, bookstore, concessions and dining hall point of sale systems can all be microsegmented within their own respective VLANs to ensure that payment processing is fully secure and the devices offer no opportunity for nefarious network activity. All of these network VLAN criteria and configurations can be easily customized to meet the institution's security policies, and the rXg ensures that these various headless devices are securely microsegmented per the institution's requirements quickly and automatically on association, ensuring the most secure operation of IoT infrastructures possible across the entire network.

Providing Unrivaled Service to High-Volume Guests Across Campus Venues

Whether it be 95,000 dedicated fans in your main stadium there to watch the big rivalry game of the year, or a large group of e-sports competitors and their fans insatiably consuming every byte of available network capacity, or the thousands of friends and family proudly updating social media with immediate-time photos of the various academic ceremonies held throughout the term, today's higher education institutions must provide network services for surges of very large groups and their data devices. When planned and managed properly, these large gatherings can

be an opportunity to drive guest engagement, improve the overall event experience, and help drive additional revenue for the institution. The guest experience during these surge events can have a significant impact on institutional reputation, potentially affecting future attendance to events - or much worse, future recruitment and enrollment.

The rXg is an exceptional border gateway for these large venues, with integrated SD-WAN and traffic shaping capabilities. SD-WAN functionality provides secure and reliable connectivity between the venue and the Internet, with link aggregation, carrier diversity, failover capabilities, and application affinity. Traffic shaping with airtime fairness automatically provides bandwidth equalization for the large and diverse volume of users and devices, ensuring that every user gets the connectivity that they need, and the network remains responsive and reliable.

Additionally, the large-scale venue network remains secure with advanced and automatic microsegmentation for device and user types, preventing unnecessary and unauthorized device communications, significantly reducing threats of malware distribution and other cyber attacks. And advanced microsegmentation ensures that the many disparate organizations needed to create a peerless guest experience - from PoS concession systems to smart sign infrastructure to venue security - are completely secure and isolated from the guest devices connected to the network.

And the rXg is cluster aware, enabling bandwidth and capacity can easily scale up or down to meet the ever-changing needs of these dynamic venues. Traffic can be distributed across multiple gateways, allowing the network to support the heaviest usage without compromising performance.

Conclusion

With the advanced and varying network services enabled by the rXg, institutions of higher learning now have the opportunity to ensure an unmatched student experience, maximize full staff productivity, support large transitory guest data demands, and realize new and expanded revenue opportunities, all in a single simple-to-manage multi-services gateway.

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