



## Universidad de Salamanca Liberates Learning Constraints with the Network

### Universidad de Salamanca

Size: 28,000 students, 2,400 faculty

Industry: Higher Education

Location: Salamanca

Country: Spain

### Solutions

- Cisco Aironet 1800, 2800 Series Access Points
- Cisco 8500 Series Wireless Controllers
- Cisco Catalyst Switches
- Cisco Prime Infrastructure

### Modernizing the Network

What does an 800-year-old university do to stay modern? For Universidad de Salamanca in Spain, the key is to give every student the opportunity to achieve educational success through open communication and collaboration—everywhere, on any device.

Founded in 1218, Salamanca draws more than 28,000 undergraduates and graduate students from across Spain and the entire world. It is an important center for the study of humanities, law, economics, and a rich variety of medical and scientific research.

Technology plays a huge part in education at Salamanca. The University depends on its network to support learning in classrooms and lecture halls, provide connectivity in student dormitories, and to improve communication and collaboration at special events. Dependable, secure wireless connectivity is essential to enabling the services that mobile users need, wherever they need it, on the device they choose. However, Salamanca's existing system was beginning to show its age.

“Our wireless system was ten years old,” explains Ramón Bellido de Vega, IT Communications Manager, Universidad de Salamanca. “As a result, we could not provide enough coverage in some areas. We needed to provide wireless speed and density in lecture halls and in high-density areas for e-learning.”

The IT team at Salamanca needed to refresh its network infrastructure to deliver dependable, pervasive wireless performance across 80 university buildings in four different cities. They sought a high-performance solution to help connect instructors to the online resources they needed to teach, and accommodate the increasing demand for connected learning apps and e-learning in the classroom. The solution would need to deliver improved coverage to support high-density events with thousands of attendees needing secure wireless access. And it would need to be able to scale to accommodate future needs and new applications.

More and more teaching methods are incorporating digital technologies for project-based learning, global

*With Cisco Wireless solutions,  
Universidad de Salamanca:*



Access apps that demand high-speed connectivity



Improved reliability and uptime



Flexible and scalable infrastructure for future needs

collaboration, and to access digital content previously unavailable. “Our main requirements were wireless security, speed, and density, but we also wanted a solid network solution that would help make all of our new ideas a reality,” says Bellido.

### Pervasive Wireless Rids Classrooms of Boundaries

After exploring a variety of options, Universidad de Salamanca chose a wireless solution based on Cisco Aironet® 1800 and 2800 Series Access Points (APs). Built specifically for complex, enterprise-grade networks, they support 802.11ac Wave 2, the latest Wi-Fi technology. Wave 2 technology is ideal for high-density networks, and lets the University deliver better performance, higher speeds, and more bandwidth to classrooms, lecture halls, and other areas around campus.

The Cisco Aironet 2800 Series AP provides two powerful, easy to use features. The Flexible Radio Assignment (FRA) capability automatically detects when a large number of devices are connected to a network, and adds capacity by changing the access points from 2.4/5GHz radios to dual 5GHz. It’s perfect for dynamic environments like lecture halls and classrooms. “FRA allows us to use all radios of each AP more efficiently,” says José Manuel Agudo Cuesta, Security and Network Consultant. “It helps us maximize our investment protection and wireless client performance, by distributing clients more evenly among different APs. Our wireless capacity planning was designed to take advantage of this feature.”

The University also employs High Density

Experience (HDX), which alleviates network strain when large volumes of client devices attempt to connect to APs. “With HDX, we can utilize Dynamic Bandwidth Selection (DBS) to use all the spectrum available in 5GHz band without fear of interference,” says Cuesta. “This capability lets us support a high number of APs with 80MHz channels even in older historic buildings, providing our wireless users with more speed and lowering channel utilization.”

Salamanca explored other wireless options, but none could provide the combination of support for simultaneous multiple clients; expanded coverage and roaming capabilities; and antenna flexibility for high density environments. Bellido and his team were also experienced in working with Cisco solutions that were already in place across the University network.

“We looked at competitive products; we chose Cisco because we needed a solution that met the density and speed needs of today, while easily meeting the growth challenges of tomorrow,” he says.

To unlock the full potential of its new wireless access points, Salamanca also deployed Cisco 8540 Wireless Controllers, which give the University centralized control, management, and troubleshooting across its entire campus. These wireless controllers are also an important part of the Cisco Digital Network Architecture (DNA), an open, extensible, software-driven architecture that accelerates and simplifies network operations with policy-based automation.

To support the wireless platform with scalable, cost-effective switching, the University deployed Cisco 2960-X Series

Switches. These stackable Gigabit Ethernet Layer 2 and Layer 3 access switches are easy to deploy and manage, with automated software installation and port configuration.

To provide connectivity between campus branch locations, Salamanca also deployed Cisco Catalyst 6509 Series Switches, which offer high port densities that are ideal for the University's wiring closet, and distribution environments. Cisco Catalyst 4500-X Series Switches also support branch connectivity, providing a cost-effective, fixed aggregation form factor, together with high availability to help minimize downtime.

Fast, reliable, anywhere access is the key requirement for optimal student engagement. "We have installed our new wireless solution all across the University," says Bellido, "This extends the classroom beyond its physical walls so learning can happen anytime and anywhere."

### Secure Access, Easy for IT

Salamanca uses Cisco Prime™ Infrastructure as a single pane of control and management across the network. This unified solution provides IT with consolidated wired and wireless lifecycle management, plus application visibility and control.

With Cisco Prime, the University can manage its network, devices, applications, and users – all from one place. "Cisco Prime Infrastructure gives us improved vision of all our network components, and also reporting functions," says Cuesta. "We use it to troubleshoot our wireless applications, and it helps us track down the source of problems faster."

The university's IT also takes advantage of Cisco Application Visibility and Control (AVC) for improved visibility and prioritization of traffic. With AVC, Salamanca IT can ensure that educational apps have more priority than background social apps. With students, any application can be the latest rage and the latest bandwidth sink. Cisco's AVC helps IT stay ahead of the viral trends with reliable, prioritized application-aware policies. Classroom learning and accessing educational content receive precedence with dependable network bandwidth.

Cisco's account team, together with Cisco engineers, worked closely with the University IT group from the outset, to help ensure a smooth, rapid rollout of the new solution. The deployment across dozens of buildings at multiple sites was completed in a year. Cisco Technical Support Services help the University ensure availability and get the most out of its investment.

At each stage in this journey, technology plays an instrumental role in equipping new and more advanced modes of teaching and learning. "Cisco is partnering with University of Salamanca to digitally transform education with pervasive, secure wireless access that supports the device density and new learning experiences," says Bellido.

### Reaping the Benefits of Improved Access

Refreshing and expanding the wireless network has delivered immediate benefits for the Universidad de Salamanca community. The IT team added hundreds of new access points, expanding the wireless network from 700 APs to nearly 1300, to dramatically improve coverage.

With its new Wave 2 technology, the University can make the most of this extended presence. The new access points support high density areas to enable more students and visitors to take secure advantage of new learning initiatives, online use of applications, and collaboration in academic zones, as well as remote locations. Their accelerated performance also lets students and faculty use rich media and multimedia applications that demand high-speed connectivity.

"Many of our science and biomedical apps require students to connect to multimedia content or 3D models of humans," says Bellido. "This kind of application simply was not possible with the old network. Now, students can take advantage of more advanced human body simulators as part of their medical studies, and do it from any location."

The University is also taking advantage of a more streamlined architecture that requires fewer wireless controllers. This

## Products and Services

### Wireless

- Cisco Aironet 1800, 2800 Series Access Points
- Cisco 8500 Series Wireless Controllers

### Systems Management

- Cisco Prime Infrastructure
- Cisco ONE™ Software

### Routing and Switching

- Cisco Catalyst 2690-X Series Switches
- Cisco Catalyst 4500-X Series Switches
- Cisco Catalyst 6500 Series Switches

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**Ramón Bellido de Vega**  
IT Communications Manager,  
Universidad de Salamanca

modern, centralized solution interacts smoothly with Cisco Prime Infrastructure, providing the real-time visibility and insight that the small IT team needs to manage the University’s entire network. The result is improved reliability and uptime, and faster resolution of issues.

“We are saving a great deal of time with our new solution,” says Cuesta. “With the old network, we had to spend much of our time troubleshooting network problems and supporting individual subscribers. The new network reduces many of these support tickets, freeing up our staff for other tasks.”

The highly-available network invisibly empowers so many different aspects of the university. “As a IT Communications Manager, I am constantly connected over multiple devices. I never worry about dropped calls or sharing secure information,” says Bellido.

### Constantly Evolving and Expanding for New Needs

Like most higher education institutions, the Universidad de Salamanca is constantly exploring how it can serve students better with new academic applications. To keep pace with constant

change and expansion, its Cisco network is flexible and scalable to accommodate new services when needed.

“We’re planning to extend the network to new buildings, and are also exploring how we can add more video and rich media to our instruction,” says Bellido. “We’ve had some initial discussion about adding technologies like analytics, and although we don’t yet have those plans in place, we are confident that the infrastructure could support them in the future.”

Salamanca is also considering deploying Cisco ONE™ Software to flexibly connect its campus with software-based wired and wireless access.

In 2018, Universidad de Salamanca will celebrate its eighth centennial, and preparations are already underway. With its scalable, manageable Cisco infrastructure in place, the University is looking forward to innovative education for many years to come.

### For More Information

To learn more about Cisco Wireless and Mobility solutions, visit:

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