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Spanish University Supports New Services with Network Upgrade

University of Granada prepares to meet future needs by enhancing Cisco infrastructure.

EXECUTIVE SUMMARY

Customer Name: University of Granada
Industry: Education
Location: Granada, Spain
Number of Employees: 5,000 employees; 80,000 students

BUSINESS CHALLENGE
- Support collaboration between researchers, teachers, and students worldwide
- Support e-learning and access to online resources, including HD video resources
- Help ensure network security and stability

NETWORK SOLUTION
- Upgraded Cisco Catalyst 6500 Series Switches on campus
- Deployed Cisco Nexus Switches in data centers
- Leveraged private high-capacity fibre network with future plans to support 100 Gigabit Ethernet (GE)

BUSINESS RESULTS
- New services delivered to students and staff, increasing user satisfaction
- Integrated network solution simplifies and centralizes management
- International Excellence Award provided funds for future network investments

Business Challenge

The earliest universities were built in towns or cities, the communication hubs of their day, because the best education requires sharing of ideas with other people. These days, with communication and collaboration more important than ever, universities create their own hubs, which often extend far beyond their physical campuses.

The University of Granada has risen to the challenges of today's educational environment: it was the first university in Spain to run a 10 GE backbone, which it did in 2005 on Cisco Catalyst® 6500 Series switches. It offers 80,000 students e-learning services as well as classes at its eight campuses: five in Granada, two in North Africa, and one virtual campus (CVI-UGR). The university spans 70 buildings on its eight campuses, and needs to provide all members of the community with high-speed access to both internal and external resources. In particular, it has to help ensure that its world-class researchers can communicate with each other and with experts around the world, quickly and in high definition whenever possible.

In 2011, Antonio Ruiz Moya, chief technology officer at University of Granada, recognized that its existing infrastructure could no longer support the demands of its scientific community, students, and staff. New end users and applications were coming onstream, as were new services including cloud, high-performance computing (HPC), video, voice over IP (VoIP), and SAN services. The university received the Campus of International Excellence Award in 2009 and allocated a portion of the award funds in 2011 for the renewal of its network infrastructure on its eight campuses.

"In order to ensure the security and stability of our network, we needed load-balancing for our infrastructure and flexible reconfiguration in case we encountered problems with the fibre optic network," Ruiz Moya says. "Plus, we wanted to take full advantage of our own high-capacity fibre network, ultimately creating a 160 GE backbone, more than 16 times faster that what the local metropolitan area network is capable of."

"The Cisco Catalyst and Nexus solution had proven robust in meeting our needs," says Ruiz Moya. "We had already begun using software features of the Cisco Catalyst 6500 Series Switch to enable load-balancing between servers and access monitoring. We chose Cisco because its global architecture configuration offered all the features we needed and enabled us to manage everything from a single console."

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Network Solution

Today the University of Granada's network has six main cores, each with two Cisco® Catalyst 6500 Series Switches acting as a Virtual Switching System for improved resiliency and simplified management. Application Control Engine (ACE30) and Network Analysis Module (NAM-3) Service Modules, integrated into the Catalyst 6500 chassis, provide load-balancing, content-switching, and application acceleration capabilities, and network monitoring and management, respectively. Cisco ASA 5500 Series Adaptive Security Appliances (ASAs) provide network monitoring, and a Cisco ASA 5585-X Adaptive Security Appliance supports the university's VPN with the industry's highest VPN session counts and twice as many connections per second as competitive firewalls.

The university also uses Cisco Catalyst 3560, 3750-X, and 4500E Series switches for campus access. Within its data centers, the university deployed Cisco Nexus® 5548, 5596, and 2248 Switches. The network will shortly incorporate Cisco fibre channel technology in its storage area network and will ultimately provision 160 GE links between data centers.

> "We were the first campus in Spain to provide wireless coverage for 100 percent of the university, all 70 buildings, and we did that through Cisco," says Moya. "We're consistently recognized for IT innovation, and Cisco continues to support us in our strategy. It gives us the high capacity and security we need to deliver services and communications to everyone in the university community regardless of their locations or access devices. And by providing one unified network, it helps us to be among the first to develop and deliver new services."
> — **Antonio Ruiz Moya, Chief Technology Officer, University of Granada. Spain**

Business Results

With the capabilities of its refreshed campus network, the university recently launched a TV channel, to give the community of students and researchers access to video resources, libraries, and research teams through high-definition video broadcasts. High-performance computing and other cloud services running over the new core deliver additional services and the performance that students and researchers require.

One of the key differentiators of the Cisco solution is its single console, the Cisco Prime Infrastructure management console, that allows administrators to manage multiple services including firewall, load-balancing services, network monitoring, analysis, and security.

"Integration is a huge benefit for us," says Ruiz Moya. "We didn't want a handful of different technologies, each with its own methodology. With the Cisco solution, we get all the network information we need together, on one console, so we can make a holistic analysis of our service."

Cost Savings

Using Cisco Integrated Service Modules reduces the university's power use compared to having to use separate appliances for load-balancing or traffic monitoring. This supports the university's energy sustainability program.

Plus, the versatility of the Cisco Catalyst Switches helps enables the university to continue to leverage its earlier investment, through incremental upgrades rather than complete system migrations.

Research is a key priority for the European Commission, and the university's innovative Cisco infrastructure strengthens its research position and helps the university qualify for additional funding to fulfill its short- and long-term research goals.

PRODUCT LIST

Routing and Switching
- Cisco Catalyst 6500 Series Switches with Supervisor Engine 2T
- Cisco Catalyst 3560 Series Switches
- Cisco Catalyst 3750-X Series Switches
- Cisco Catalyst 4500E Series Switches
- Cisco Nexus 2248 Switches
- Cisco Nexus 5596 Switches
- Cisco Nexus 5548 Switches
- Cisco 3745 Multiservice Access Routers

Network Management
- Cisco Prime Infrastructure
- Cisco Catalyst 6500 Series Network Analysis Module (NAM-3)

Security and VPN
- Cisco ACL Firewalls
- ACE 30 (Application Control Engine) modules
- Cisco ASA 5585-X Adaptive Security Appliance

Higher Bandwidth to Support Excellence and New Services

In accordance with European standards, the university is evolving to support an innovative approach to higher education that requires more technology and high-bandwidth communications. The University of Granada is upgrading its infrastructure to meet the demands of researchers who want more high-performance computing resources to enhance their interactions both with other departments within the university and with researchers around the world.

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For More Information

To find out more about Cisco Switching, go to: http://www.cisco.com/go/switching.