



Technology Company Creates Showcase Intelligent Building

Gruppo RETI uses Cisco Unified Communications to help develop new business opportunities in building automation

EXECUTIVE SUMMARY

Customer Name

Comunicazioni e Sicurezza S.r.l. (a Gruppo RETI company)

Industry

Technology

Location

Milan, Italy

Number of Employees

150

Business Challenge

- Improve the working environment and obtain full building control
- Develop business opportunities in building automation
- Optimise assets and reduce costs

Solution

Intelligent building - based on Cisco Connected Real Estate framework and supported by Cisco LAN and Cisco Unified Communications

Business Results

- Better working environment, flexibility and control for employees
- Improved security for assets and people
- Simplified building management and control
- Reduced energy costs through optimised environmental controls
- A development test bed and showcase for new services

Business Challenge

Gruppo RETI is a forward-looking organisation, based outside Milan, that provides a range of technology-related services to domestic and multinational customers. The company has grown steadily since it was set up in 1994: its revenues totalled US\$11.5 million (€8.5 million) in 2006 and it currently employs 150 people. One of Gruppo RETI's activities is selling Cisco solutions to small and medium-sized businesses in its role as a Cisco SMB Select Partner. The company also uses Cisco technology extensively in customer projects.

Gruppo RETI moved to new premises early in 2007: a four-storey headquarters and a separate two-storey building that houses the company's data centre, with nearly 100 servers, its back-office applications and the test beds for new applications being developed for customers.

The company decided to use the move as an opportunity to create an 'intelligent' and flexible building, based on a unique system that integrates building automation functions and optimise power management. The goal was to provide a comfortable and efficient working environment that can be centrally controlled and personalised on the basis of users needs. Gruppo RETI assigned this task to one of its companies, Comunicazioni e Sicurezza S.r.l., which specialises in domotic and building automation disciplines. Key requirements included the ability for users to interact easily and quickly with:

- lighting systems
- air-conditioning and heating
- access control
- video surveillance
- security and alarm systems
- power usage

Implementing such a solution would bring other business benefits too. Gruppo RETI sees building automation as a growth area for the company and an important market in which to invest. With ambitious plans to build a strong presence in this field, Gruppo RETI wanted to support its software development and sales activities by creating a showcase environment for a fully integrated, intelligent building.

There was no doubt that an all-IP architecture would be a fundamental part of the solution. Bruno Paneghini, president of Gruppo RETI, explains: "What gave me the incentive to invest deeply in building automation was the possibility of gaining full control of the premises, especially in terms of energy consumption and access control. Our group has no defined working hours, so we needed a structure flexible enough to support the continuous entrance and exit of employees, without compromising the security of property or personnel. I also wished to realise an exciting and promising connection between the technology and the aesthetics of the last century, and today's technology which is dominated by the IP protocol."

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—Bruno Paneghini, President, Gruppo RETI

Network Solution

Comunicazioni e Sicurezza used Cisco Connected Real Estate as its blueprint for creating an intelligent building. Cisco Connected Real Estate (CCRE) is an IP-based framework for merging information and communications technologies and building control systems into one enabling infrastructure. It allows owners and occupiers in the commercial and residential sectors to improve the efficiency of their buildings, thereby reducing costs and enhancing the living or working environment.

Comunicazioni e Sicurezza chose a LAN based on high-performance Cisco Catalyst switches as its infrastructure for voice, data and video communications. The company then developed a common set of user interfaces between the IP infrastructure and its building automation, access control, security alarm and video surveillance systems.

Michele Lucioni, project manager at Gruppo RETI, explains the key role played by Cisco Unified Communications: "We needed a phone with a customisable interface to act as a primary display and control device. After an extensive review of what was available on the market we selected the Cisco Unified IP Phone. The phone's display and XML features made it possible for us to develop command and control applications that add real intelligence." As well as supporting advanced IP telephony, Cisco Unified Communications Manager also provided an easy-to-develop XML-based software environment on which Comunicazioni e Sicurezza was able to integrate various building automation systems to create an intelligent building.

All the building's electrical and electronic devices are logically connected to a single bus and integrated through a specific application framework, based on IP protocol, that was developed by Comunicazioni e Sicurezza's specialists. In this way, heterogeneous devices which are all part of the building automation infrastructure can be seen and managed as a single and complete homogeneous system.

The framework enables interaction among devices that are usually unable to communicate or are not integrated. A wide range of building functions, previously considered as stand-alone, can now be configured using a console and accessed - via the IP network - through devices such as:

- Cisco Unified IP Phones placed on each desk
- PCs (Web interface)
- PDAs
- Touch screens situated in each office

For example, a button that opens and shuts the window blinds can be simply reconfigured, using the console, to control office lighting. No other actions are required. Functions that can be controlled over the network include:

- Traditional buttons for basic functions and scenarios
- Switching lights on and off, opening and closing windows (Tip-Tronic electrical windows), opening and shutting window blinds
- Controlling heating, ventilation and air conditioning (HVAC) - for example, HVAC systems automatically switch off at the start of each weekend and switch on again early on Monday morning
- Monitoring video surveillance cameras
- Interacting with alarm and access control systems
- Watering the gardens, using an automatic trigger that is linked to a weather station on the roof of the building.

Gruppo RETI's employees use Cisco IP Phones to communicate with the buildings' videoentryphone systems and to view still images from the IP surveillance cameras. The videoentryphone is integrated with the surveillance system to allow calls to be forwarded to receptionists and security staff, who can then use their Cisco IP Phones to validate the image and open gates. The images, which are refreshed every two or three seconds, can also be viewed on a large plasma screen in the lobby of the main building. Intelligent chips on employees' identity badges provide access to the premises and control access to specific areas, according to corporate policies.

To simplify communications inside the premise, Gruppo Reti has integrated Cisco Unified Mobility with Cisco Unified Communications Manager. Project Managers can now connect their Nokia E Series mobile phone to the wireless LAN to create their own cordless office phone. With one single means of contact, employees can also benefit from call savings by making calls over the LAN (as opposed to the mobile network).

One of the features of the new system is something called 'scenario management' which enables all employees to set their own working environment based on their preference or mood, covering lighting, temperature and blinds. This is supervised by a central system that will ensure that the lights will go out if nobody is moving and that blinds will open and close at the beginning and end of each day. Scenario management can give a 'one touch' start to a range of devices or can be configured to be triggered automatically in particular situations.



“A great way of understanding the impact of the system is to consider my typical day,” says Claudia Castiglioni, marketing executive at Gruppo RETI. “When I arrive at the office, my badge will automatically open the main gate so I can park inside the garden. My movements will be recorded by an IP camera. I go to the main employee entrance and, if I am the first in, my badge will unlock the door and re-set the alarm system. When I get to my own office, my badge will open the door but not turn on the lights as I have set my own default scenario. The window blinds will be up.

“During the day, I can change lighting and environmental conditions from the IP phone on my desk. When I go out for lunch, I need do nothing as the system senses no movement in the room and will switch off the lights and lock doors as necessary. If I am the last person in the building, the alarm system is automatically activated.”

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Business Results

As building technologies advance, they have become more complex to operate. Gruppo RETI realised that, whilst all of these technologies and systems have clear benefits in their own right, they need to work together to deliver the maximum advantage. This has proved easy to achieve with the common IP platform and a CCRE framework, and it is already starting to deliver the benefits Gruppo RETI was seeking.

The company's security has been enhanced, primarily by the use of automatic access control systems. Using biometric devices, presence recording and proximity cards, access control policies can be quickly established for different areas of the building; the system is linked to a central Active Directory to give greater flexibility. Further security is delivered through the video surveillance systems, which can be accessed across the whole network, and infrared barriers outside doors and windows.

Gruppo RETI expects to be able to quantify some of the financial returns from the system shortly. Energy consumption is monitored by area and has already started to produce some promising results. The initial and ongoing cost reductions that result from a simplified, unified network platform will also be significant.

Creating a better working environment for employees has been a major step forward. The new system ended the long-running 'air conditioning war' among employees, for example, and now most workers can decide on key aspects of their environment. Apart from temperature and ventilation, people can set their lighting conditions from both artificial and natural light to suit their needs, whether they are writing, reading or in a meeting. They can create their own ideal working conditions.

Every employee now has the benefit of one of the most sophisticated intelligent building implementations in Italy. Another benefit, less easy to quantify, is that Gruppo RETI has created a flagship environment that demonstrates how to work smarter and greener - objectives that are shared by many organisations.



Next Steps

Gruppo RETI plans to exploit its expertise with intelligent buildings by selling custom solutions and consultancy services through Comunicazioni e Sicurezza. The Group is in the strong position of having created not only a state-of-the-art environment for its employees, but also a test bed for future developments and a working model that demonstrates its capabilities to potential customers.

With the infrastructure and essential systems in place, there are now no limits on how far the subsystems can be integrated. Integration and the common IP platform also offer the possibility of new business models. It will be much easier for Gruppo RETI to outsource its building management systems to external specialists: for example, video surveillance systems could be outsourced to a security specialist.

The framework's flexibility makes it easy to introduce and integrate new communications interfaces into the system. Gruppo RETI will be able to offer new services to its customers, such as diagnostic control of entire building infrastructures (including energy consumption anomalies, device operation defects and so on) or remote management of customer properties (for example, by re-programming push-buttons, changing scenarios, developing new applications and so on).

Technical Implementation

The core LAN is based on Cisco Catalyst 4500 Series Switches and Cisco Catalyst 3750G Switches. The access LAN consists of Cisco Catalyst 3560 Switches with Power over Ethernet functionality which connect users, access points and IP cameras. Gruppo RETI's domotic, antitheft and access control equipment is linked to the Cisco Catalyst 3560 systems.

Cisco Unified Communications Manager software provides call processing capabilities over the IP LAN. About 150 Cisco Unified IP Phones 7900 Series - 7970, 7960 and 7920 models) are used to make telephone calls and to access building control systems. The Cisco Analog Telephone Adapter 186 provides links with the buildings' entryphone systems. Gruppo RETI has also deployed 10 Cisco Aironet 1130 AG lightweight wireless access points to create a wireless LAN that is managed by a server running Cisco Wireless Control System. The company plans to extend its use of wireless technologies by providing secure wireless connectivity for guests.

For Further Information

To find out more information, go to

<http://www.cisco.com/en/US/products/sw/voicesw/index.html>

Product List

Routing and Switching

- Cisco Catalyst 4500 Series Switches
- Cisco Catalyst 3750G Switches
- Cisco Catalyst 3560 Switches

Voice and Unified Communications

- Cisco Unified Communications Manager
- Cisco Unified IP Phones 7900 Series
- Cisco Analog Telephone Adapter 186

Wireless

- Cisco Aironet 1130 AG Wireless Access Points



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