



Cisco Borderless Network enables Abtec and Matrix to develop innovative real estate solution for cutting energy use, carbon, and costs.

## EXECUTIVE SUMMARY

**Customer Name:** A global investment bank

**Industry:** Financial Services

**Location:** London, UK

**Number of Employees:** Over 8,000

### Challenge

- Simplify and improve efficiency of building services
- Reduce energy consumption, CO<sub>2</sub> emissions, and costs

### Solution

- Cisco Borderless Network allows building services to be integrated and partitioned within the same IP platform
- Cisco Unified Computing System enables building management systems to be hosted and run on virtual machines

### Results

- Integrated IP-based platform for building management systems
- Improved building management and visibility of energy usage
- Potential for circa £200,000 annual saving from energy efficiency measures
- Opportunity to lower carbon emissions by around 1,500 tonnes per annum

## Challenge

Cisco partners are always looking for new ways to help customers unlock value. One approach is to take Cisco products and services, and add in-house skills and expertise to create differentiated and compelling market offerings.

A Cisco partner, [Abtec Building Technologies](#), took this approach a step further. Collaborating with [Matrix](#), a leading energy management company, it fused Abtec's knowledge and expertise in Cisco network and data centre architectures with Matrix's leadership in sustainable energy efficiency.

"We spotted a gap in the market," says Andy Beynon, MD for Abtec. "When it comes to energy management, customers don't want a rip and replace approach. Neither do they want the headache and complexity of adding more point product solutions. Cisco's Borderless Network technology enables clients to increase a building's efficiency reliably and securely."

It was a view shared by Matrix Sales Director, Bob Gilbert: "We knew that Cisco's Borderless Network architecture has EnergyWise capabilities embedded within it. However, we saw another huge opportunity. And that's around helping customers realise early benefits by consolidating and virtualising building management systems on one easy-to-manage IP platform."

The opportunity to take this joint proposal to market came when a leading global investment bank invited tenders to update its building control systems. The bank had occupied its London offices for many years, and the systems it used to control central plant, lighting, and heating, ventilation and cooling (HVAC), were quite dated. The end result was a sprawling legacy of isolated systems that could not interconnect or communicate with each other because they had been built using closed or proprietary technologies.

Already recognised as a sustainability leader through an extensive Corporate Social Responsibility programme, the client had several requirements. Top priorities included reducing heating and cooling periods, turning off plant in unoccupied sections of

the building, and introducing automatic movement sensors to control lighting. Moving to a modern IP-based control system was absolutely key, along with improving resilience, security, reliability, and ease of management. Given the importance of trading staff to the business, it was critical to maintain comfort for employees throughout all stages of the project.



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Andy Beynon  
Managing Director  
Abtec Network Systems

## Solution

IP connectivity was required throughout the building to interconnect a vast array of building sensors and controllers, many of which were located in hard-to-reach locations, such as risers and plant rooms. In addition, the new Cisco infrastructure needed to be completely separate from the bank’s corporate network, but linked to a remote monitoring centre.

“Our first task was to take the client’s high-level functional specification and translate this into a technical proposal, defining the network architecture and the individual components,” says Beynon.

The Cisco® Borderless Network incorporates Cisco Catalyst® 3750X and 4506 Series Switches within a fully redundant design that interconnects 64 plant control centres and 1350 local HVAC controllers spread across eight floors.

Multiple VLANs enable the various building control environments to be managed separately by different service providers. For added resilience, the lighting, HVAC, and central plant traffic are each split between two dedicated VLANs. Two further VLANs are used for supervisory and management services, making eight in total.

“The IP platform greatly simplifies management,” says Gilbert. “For example, the lighting contractor can allocate IP addresses for their equipment without risk of impacting the BMS contractor. But, because the VLANs effectively use the same switch, data can still be exchanged between the two systems.”

The supervisory software for the HVAC and lighting head-end systems is hosted on virtual servers, enabled and managed by the Cisco Unified Computing System™ (UCS™).

To help ensure security and high availability, the Cisco partners adopted various techniques, such as locking down MAC addresses and using redundant VLANs, dual redundant fibre links from access to core switches, and redundancy features enabled by Cisco Catalyst 3750X and VMware vSphere High Availability.

As an added challenge, most of the implementation work had to be completed out of hours, while keeping the building fully operational. For Abtec and Matrix engineers this meant arranging site access several weeks in advance.

## Results

Implementing a fully integrated Cisco intelligent building management solution has provided the bank with a more accurate and clearer sight of energy usage. With building systems now integrated within one common IP infrastructure, building management information, such as sensor data, can be easily shared across different control domains. Movement detectors feed real-time information to both the lighting system and the HVAC system, enabling lighting to be switched off and cooling to be suspended, or reduced in unoccupied areas of the building.

“As well as saving energy, the Cisco Borderless Network has created a more controlled working environment for the Bank’s employees,” says Gilbert. “For example, temperatures are now more consistent with occupation requirements, and lighting is now optimised in real-time. These can be critical factors, particularly in a highly volatile trading environment.”

Control systems have been enhanced. For example, lighting is no longer simply on or off. Ambient light detectors allow building lighting to be dimmed to help ensure optimum illumination with minimum power consumption at all times. Meanwhile lowering fan speeds in heating and ventilation units has eased the load on roof-mounted air-handling units, thereby reducing static pressure requirements and saving energy. The solution also provides earlier awareness of failing systems that are consuming more energy than usual through real-time monitoring.

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Bob Gilbert  
Regional Sales Director  
Matrix

Operational efficiency and energy savings extend into the data centre. “The days of hosting building management software on racks of dedicated power-hungry and under-utilised physical servers are long gone,” says Beynon. “We’ve consolidated everything on two Cisco UCS blade servers, which are managed remotely using the built-in KVM (Keyboard/Video/Mouse) console.”

Although it is still early in the installation, the bank is set to realise substantial financial and sustainability benefits from reduced energy usage. Results from similar Cisco deployments show that centralizing building management functionality over a converged IP network can yield energy savings of up to 20 per cent. For a building such as the bank’s, this could easily translate to savings of around £200,000 and 1,500 tonnes of carbon per annum.

A typical commercial building’s IT assets consume 25 per cent of total power usage. Embedded within the Cisco Catalyst Switches, Cisco EnergyWise would provide the bank with a second round of energy and carbon savings from the ability, for example, to automatically turn off IP phones and PCs when these devices are not in use.

### For More Information

To learn more about Cisco Borderless Networks and EnergyWise capabilities, please go to: [www.cisco.com/en/US/netsol/ns1015/architecture.html](http://www.cisco.com/en/US/netsol/ns1015/architecture.html)

### Product List

#### Routing and Switching

- Cisco Catalyst 3750-X Series Switches
- Cisco Catalyst 4500 Series Switches

#### Data Centre

- Cisco Unified Computing System

### About Abtec Building Technologies

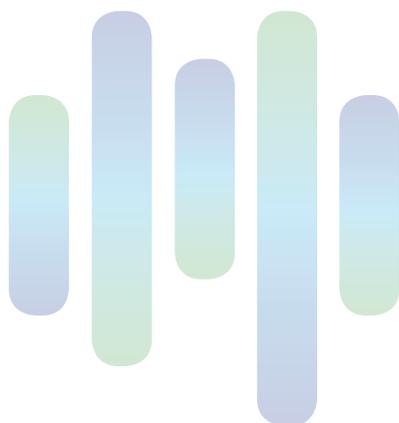
Abtec is a leading IT, networking and building management systems provider. Using Cisco technology it creates a common IP backbone network within an organisation. This enables the client to consolidate its IT, building management systems and communications over one network. This innovation supports the client’s need to reduce cost. It does this by:

- Reducing energy – remotely controlling lighting with minimum power consumption
- Virtualising the server and desktop environment
- Using IP technologies to deliver mobile and fixed line telephony

### For More Information

To find out how Abtec could help your clients reduce operating expenditure please see: [www.abtecbt.com](http://www.abtecbt.com)





### About Matrix Control Solutions

Matrix is a leading building energy management system company; unlocking the full value of energy management for its clients by reducing real-time demand for energy, improving energy efficiency and delivering sustainable energy savings. It provides Remote Active Energy Management focusing on the constant monitoring of the site or plants' performance against a predetermined energy efficiency profile. Deviation from a defined profile alerts a Matrix Energy Monitoring Centre allowing immediate views of the site or plant remotely to diagnose the problem, but more importantly to correct and return to the agreed profile.

### For More Information

To find out how Matrix could help your clients reduce operating expenditure please see: [www.matrixsee.co.uk](http://www.matrixsee.co.uk)



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