

Case study

Emirates Towers

Dubai, United Arab Emirates



Middle East's hotel and office complex offers unrivalled flexibility and efficiency to occupants

Emirates Towers is a state-of-the-art office/hotel tower complex accommodating business and vacation travelers alike. The tower is host to numerous businesses offering the latest fiber optic technology and integrated systems. The five-star hotel tower offers 500 rooms, including 40 suites and three main theme restaurants. A five-level podium building connects the towers and includes more than 40 retail, restaurant, and parking accommodations.

Challenges

- Implement a state-of-the-art technological infrastructure which is scalable for future developments.
- Provide the latest available technologies and integrations to ensure Emirates Tower's competitiveness, while ensuring a quality building environment.
- Complete the project with a limited budget and within a tight time schedule.

Solutions

- Integrate the building and enterprise systems via a redundant information technology (IT) network solution.
- Install a Metasys® building automation system and four M5 graphic workstations to manage and integrate 20 sub-systems, including the BAS, CCTV, telephone, paging, video-on-demand, HVAC, fire alarm, security, lighting, and hotel and property management systems via the IT network.
- Work closely with local Johnson Controls resources to expedite design and installation.



A spectacular atrium greets guests at this five-star hotel.

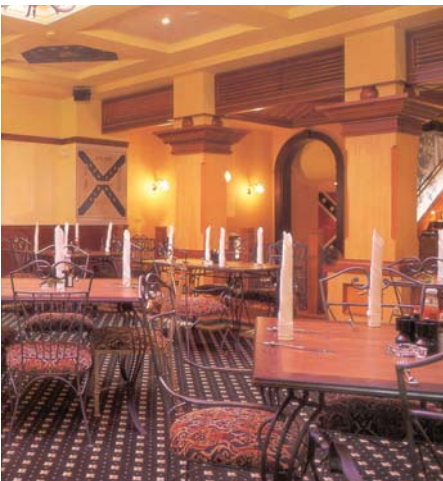
Results

- Increased operator efficiency through single-seat operation of 23,000 data points.
- Streamlined operations and maintenance costs, due to integrated systems.
- Ensured reductions in future retrofit and upgrade costs, due to scalable technology.
- Enhanced guest experience through interactive guest technologies.
- Completed project on schedule and within budget, enabling Emirates Towers to compete with other developing complexes.

Technology provides a competitive edge

In emerging tourist and recreation destinations, competitors are often differentiated based on the latest technology available in hotels and convention centers. In fact, Emirates Towers, a new hotel and business center in Dubai, United Arab Emirates in the Persian Gulf, has set a new standard in the technology quest.

A striking addition to the Dubai skyline and among the tallest buildings in the Middle East, Emirates Towers was designed to offer unrivaled flexibility and efficiency to a range of businesses. Rising 1,165 feet to its top, the office tower, the taller of the two-tower development, provides a suitable environment for Dubai's emerging High Tech sector. The second tower is home to a five-star hotel with 500 rooms, each of which features its own Internet connection and digital video-on-demand. A five-level podium building connects the two towers, incorporating a shopping boulevard covering 96,875 square feet, including 40 stores and seven food and beverage units over two levels. The entire complex is connected and functions through the latest high-speed fiber optic information technology (IT) network and a fully integrated Metasys building automation system by Johnson Controls, Inc.



One of the theme restaurants that serve visitors at the Towers.

"The vision for Emirates Towers was to create a state-of-the-art technological infrastructure which could be scalable to future information and building management technology developments," said Ivan Brinkley, corporate technical director for Jumeirah International, owner of Emirates Towers.

Scalable technology enables cost-efficient upgrading

In the past, totally integrated mechanical, electrical, and data-driven applications were not available and building managers had to operate a large number of different systems. Today, using Johnson Controls' Technology Contracting approach, property management, guest-related systems, telecommunications, fire, security, and even multimedia applications can be tied together.

A long-term consideration for Emirates Towers' officials was that retrofitting and upgrading expenses often represent approximately 50 percent of the lifetime cost of a building. The ability to upgrade is crucial to ensure that the technology in Emirates Towers remains current. An advanced integration approach can significantly reduce the budget for upgrades. Plus, scalable technology keeps the cost for installation, operation, and maintenance at a minimum.

With this in mind early in the planning stage, the search began for one company to accept responsibility for the twin-towers system integration and network. Emirates Towers officials approached the local Johnson Controls office to fill this need.

Information technology network enables systems cooperation

Given the strict criteria for the towers, Johnson Controls introduced a single-seat operation solution through a total integrated IT and building automation system infrastructure with about 20 sub-systems. The logical integration is built around a Metasys system, as shown in diagram 1.

Aside from the Metasys system, other major systems include a hotel management system, a facility and property management system, computerized maintenance management systems (CMMS), and telecommunications systems, such as digital video-on-demand (live TV, prerecorded programs, and audio), Internet, e-mail services, computer games, and e-commerce. Life safety systems include fire alarm, and closed circuit television (CCTV). Presentation media for conferencerooms is available with videoconferencing capabilities, an audio system, and projectors.

“As a partner, Johnson Controls was able to provide complete system integration of all the equipment, including elevators, fire alarm systems, and much more, all within the project deadlines. Most importantly, Johnson Controls has the local presence and resources to make ‘doing business’ easy,” said Brinkley.

Physical integration of all the subsystems and applications is achieved through one common IT Network based on ATM (Asynchronous Transfer Mode) and Gigabit Ethernet technology. The network management system handles the high-speed network and its connected devices. The change from a stand-alone system approach to an integrated system leads to significant changes in the engineering and management processes.

The key elements to the Emirates Towers Integrated System concept are the Metasys system, ATM-Backbone, and Interactive Guest Multimedia System.

Metasys system is a foundation for integration

The basic platform for the integrated solution is the Ethernet technology and TCP/IP (Internet) compatibility of the Metasys family. This provides the foundation for success for the integration technology in Emirates Towers. The use of open protocols and standards in the Metasys system ensured that Emirates Tower’s officials

were able to choose the best solutions for creating an intelligent building without losing connectivity or features.

With a 23,000 data point capacity, the Metasys system takes full advantage of the distributed intelligence concept. Four M5 Graphic Workstations create the basis for a personal command center at Emirates Towers to manage the entire BAS network.

Due to the desert climate in Dubai, one of the major issues in the design was maintaining dependable temperature and mechanical control in the building. Temperatures in the city can reach 120 degrees Fahrenheit between May and October, dropping to the low 80s the rest of the year. If temperature isn’t maintained in the buildings, it could lead to disaffected tenants who don’t renew their leases and dissatisfied hotel patrons. For this reason, all office areas and guest rooms are provided with advanced LONMARK®-certified DDC controllers connected to the local area network.

One of the main highlights of the system architecture is the various integrations of different voltage systems, including chillers, elevators, and the fire alarm system. A computerized maintenance and management system was

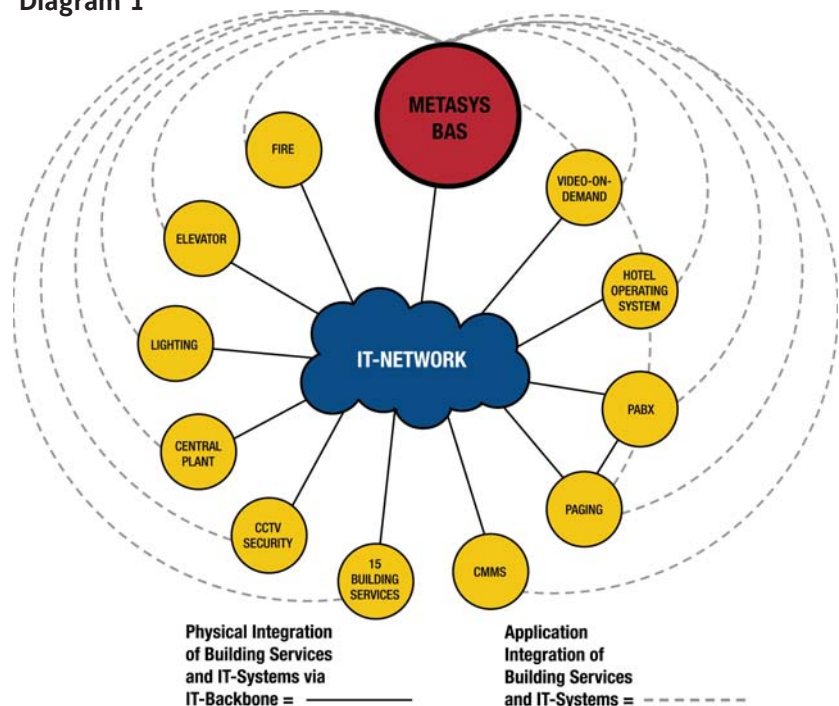


Dubai was rated one of the ten best places to work by *Global Business Magazine*.



Common areas accommodate business and vacation travelers alike.

Diagram 1





Panoramic elevators provide breathtaking views of Dubai as they soar to the 42nd floor.



Guest rooms are configured to guest needs and showcase the latest interactive multimedia systems.

integrated for maintenance and facility management. To satisfy the increasing demand for security and property protection, CCTV and an emergency lighting system were integrated. Further integrations to the hotel management system, power monitoring system, and the staff paging system round out the picture of the intelligent building concept.

ATM is the backbone of the network

At the heart of the network is a modern, scalable ATM backbone designed to easily manage and support services and protocols. ATM technology is the network infrastructure to support high-tech enterprises with various multimedia and voice, video, and data services. It provides the basis for LAN interconnectivity and fully integrated network access. LAN and the ATM backbone are managed by one common network management system.

The unique approach includes a redundant IT network solution based on two ATM switches with an individual capacity of 10Gbit per second. The network distributes television, video-on-demand, e-commerce, Internet, BAS, closed circuit television, and hotel management system data through the entire complex. The integration of the video-on-demand with the hotel management system allows a seamless and online update of the related database for automated billing.

The network is modular and flexible, enabling Emirates Towers to start on a smaller scale and expand as needs evolve to support the hotel's dynamic and changing environment. In addition, the system design ensures that any future upgrade to the optical fiber backbone and ATM switches does not adversely affect the operation of the system.

Interactive guest multimedia system

Interactive multimedia is a new guest feature offered by first class hotels to ensure a total guest experience. The ATM network allows hundreds of video streams and live TV to be transported without flicker or time delay.

A set-top box attached to the television in each room allows for a new communication interface for the guest. Based on new Internet technologies, the guest interacts with the hotel in the same way that he would with the Internet from his office or home computer. The user has the ability to select various services, including video-on-demand, interactive television for guest services, satellite television distribution, Internet web services, and more with one remote control.

Partnership sets new standards

In the Middle East, Emirates Towers has set a new standard for the integration of various, different systems and independent protocols into a manageable and operational network. Through a partnership with Johnson Controls, Emirates Towers' officials were able to both achieve and exceed their goals.

Emirates Towers' integrated systems package is an ideal solution for today's sophisticated, mixed-use facilities. It provides Internet-based technologies for business and entertainment today, while offering the ability to address the demands of the next decade.

"Johnson Controls helped us to refine our building specifications to ensure maximum building performance for today, tomorrow, and throughout the complete lifecycle of the building," said Brinkley.