



# IoE benefits transform the commercial high rise

Canadian builder EllisDon has designed and built RBC Waterpark Place III in Toronto, perhaps the most sophisticated smart and connected building to date in the Americas.

“We’ve shown how data can be applied to building systems to provide real value.”

- Stephen Foster, Managing Director of the Information Communication, Automation, and Technology Group, EllisDon

## Challenges

- Find alternatives that interconnect disparate systems managing network, lighting, building automation, energy, security, and other functions
- Save energy and lower costs with more efficient monitoring and intelligent usage
- Provide value-added benefits to tenants from intelligent building environments to increase customer satisfaction, wellness, and justify higher and longer-term leases

Among the many benefits derived from the Internet of Everything (IoE) is the opportunity to deliver better experiences to people and to enhance efficiency and savings. All of these IoE benefits—and several others—are now evident in the architectural and building industries. Network-connected technologies are transforming the workplace in a variety of compelling use cases, making buildings more intelligent, the work environment more comfortable, lowering the carbon footprint, and simplifying building management.

Intelligent, digitized, and network-connected buildings—where converged IP networks transform construction, operations, monitoring, and control to lower costs, reduce energy consumption, provide a better work environment, and other benefits—have been described for a decade or more. Now these buildings have become a reality and no better example exists to exemplify their features and benefits than the stunning RBC Waterpark Place III in downtown Toronto. Conceived by general contractor EllisDon, in a major collaboration with Cisco and 11 other specialty firms, the building is a shining example of how digitization and the IoE is connecting people, processes, systems, data, and things in everyday working environments.

## Case Study | EllisDon Corporation

Size: 2,500 employees

Location: Mississauga, Ontario, Canada

Industry: Commercial construction



EllisDon's relationship with Cisco pre-dated RBC Waterpark Place III. "Beginning in 2009 we met with multiple technology companies to find a best-of-breed partner to help us create intelligent buildings," recalls Stephen Foster, managing director of the Information Communication, Automation, and Technology Group, EllisDon. "We decided that Cisco understood what we were trying to do. They weren't just trying to sell us switches and routers. We shared a collective vision focused on solutions and outcomes for intelligent buildings, and they've been a terrific partner ever since."

Midway through the design of Waterpark Place III, owner Oxford Properties invited Cisco to share its experiences with smart and connected buildings around the world. Cisco presented technologies, use cases, and customer success stories featuring buildings that reduced energy usage and costs, and enhanced the tenant experience.

Foster became the point person for these ongoing discussions and planning sessions. Over several months, traditional building designs were compared with Cisco® Smart Connected Building plans. This analysis showed that a Cisco IP network with Cisco Power over Ethernet (PoE) where all IP devices and building systems converged on the same network could reduce an array of capital and operational expenses. Many other benefits—from a more pleasurable, temperature-regulated work environment to simplified, automated management—would also follow.

What better environment to house an IoE Innovation Center than a smart and connected (or "intelligent") building with more than a dozen integrated building systems from lighting and environmental controls to digital signage, security, and metering? Cisco was so impressed with the ultimate design for RBC Waterpark Place III that the building was chosen to be the new Cisco Canada headquarters after its completion in the spring of 2015. In addition to office and lab space, Cisco decided to house one of its seven global IoE Innovation Centers in the building. The centers are devoted to thought leadership and solutions development that capture the value and innovations possible with IoE.

EllisDon was selected as the smart-building integrator for the project, and Cisco helped integrate IT and building systems. When Waterpark Place III opened in May 2015, fiber optics connected every floor. Cisco wireless connectivity is available in the food court and mezzanine level for guest access (tenants have their own wireless options in office spaces) and multiple building systems run on various VLANs, providing more smart and connected-building use cases than have probably ever been integrated in a single facility's network.

Motion sensors talk to lighting systems that talk to HVAC systems to make everything more efficient and people's experiences more enjoyable.





## Solutions

- A Cisco IP network connects all of the systems in all floors of the building, providing multiple services across one backbone and delivering data, voice, video, and PoE
- Cisco Interactive Media solutions for improved personalized experiences
- Cisco Smart and Connected Lighting Platform for Indoor Environments

## Smart and connected lighting optimizes usage, delivers better user experience

Environmental systems in Waterpark Place III are IoE edge devices running on the Cisco IP network. Light fixtures have 30 watts of PoE, separate IP addresses, and embedded sensors. These sensors mean that each light can assess levels of daylight coming through the windows and reduce power levels and brightness to complement natural lighting. Cisco employees in the IoE Innovation Center can use their smart phones to turn lights on or off, or dim them. Light switches on the wall may become a thing of the past. Foster believes the lighting controls in the building will use 40 to 48 percent less power in the long run.

## Fresh air on demand

A certified Leadership in Environmental Energy Design (LEED) Core and Shell Platinum building, Waterpark Place III has a fresh-air ventilation system that is part of the smart and connected heating, ventilation, and air conditioning (HVAC) system. Carbon dioxide sensors in return air ducts determine the occupancy of rooms based on data from the sensors on lights and GPS triangulation with smart devices. All that data is passed to the building automation system, which determines occupancy and estimates fresh air intake levels to ensure air quality in real time.

## Enhancing your elevator experience? Indeed.

Meet the destination dispatch feature in Waterpark Place III elevators. Instead of pushing up or down, you push the floor you want to go to, and the smart and connected elevator system tells you which elevator to stand in front of that then delivers you to your floor.

## Self-service parking

Ticket dispensers. Automated gates. Payment kiosks. No humans are needed in the building's parking lots, whose systems are all connected to the Cisco IP network. Traditional parking systems are complex, time-consuming to deploy, and require a lot of point-to-point cabling. Not so with this one: the deployment was simple with fast connections to network switches. This parking solution persuaded EllisDon to add the same solution in parking lots at two other buildings nearby.

## Results

- All IP devices and systems converged on one network, saving capital expenditures (CapEx) and operational expenses (OpEx)
- Personal control of and visibility into all systems enhances user experience, wellness, innovation, cost control, and customer satisfaction



## Delivering secure media-rich services

Canadian service provider Rogers provides content over the Cisco IP network at Waterpark Place III through a point of presence (PoP) in the basement of the building. No need to bring in coaxial backbone cable at higher cost and greater complexity. Cable content can be delivered to any desk on any floor with a patch cord.

Digital signage throughout the food court, in the elevator lobbies, and in the parking garage displays content promoting the retail vendors in the building. On the integrated Cisco network, video surveillance cameras and Cisco security firewalls protect data and people.

## IoT showcase

Among its many distinctions, Waterpark Place III is being called the first commercial office building in the world that has adopted IP-native HVAC controllers and network-powered LED lighting through PoE, setting a new standard of IP adoption in buildings. "IoT is already impacting commercial construction," says Foster. "We know the importance of getting the network online early to start testing and commissioning systems. Each building we're involved with provides more value to users as we add more IoT features. We're not just talking about smart buildings anymore; we're producing them and demonstrating their value."

## Products & Services

### Routing and Switching

- Cisco Catalyst 3560 Series Switches
- Cisco Catalyst 4500 IP Base
- Cisco Catalyst 3750 PoE LAN Base
- Cisco 2951 Series Router

### Security

- Cisco ASA 5500 Series Next Generation Firewalls

### Servers

- Cisco Unified Computing System (UCS) Server

### Interactive Media

- Cisco IPTV
- Cisco Digital Signage

### Wireless

- Cisco Connected Mobility Experience (CMX)

### Connected Lighting

- Indoor PoE LED Lighting



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