TORONTO PEARSON INTERNATIONAL AIRPORT DEPLOYS A COMMON-USE NETWORK FOR TENANTS, TRAVELERS, AND EMPLOYEES

"Air travel these days has become a commodity. There isn't that much competition in the air. It is your ground facilities, your ease of use, and speed through a passenger terminal that differentiates the good and perhaps not so good airlines. With a common-use environment, we give everyone access to the basic technology and they deploy whatever suits their business. And they're coming up with some great ideas here."

James Burke, Vice President, IT&T, Greater Toronto Airports Authority

The revival of air travel, the expansion of low-cost carriers, and the continued financial difficulties that some major carriers are facing have forced airports to rethink their traditional business models. Responding to this evolution, the Greater Toronto Airports Authority installed North America's most advanced common-use infrastructure at Toronto Pearson International Airport, built on a single multiservice communications infrastructure that serves the needs of the airlines, airport tenants, and airport partners.

BACKGROUND

The airline industry is changing, and in 1998 the Greater Toronto Airports Authority (GTAA) began a 10-year airport development program. GTAA, the not-for-profit corporation that operates Toronto Pearson International Airport, has projected that by 2010 the airport will handle more than 50 million passengers per year, almost doubling the traffic in only 10 years and maintaining its position as Canada's busiest airport.

GTAA began an initiative by building a new state-of-the-art terminal facility that eventually would replace both Terminals 1 and 2 with a new, modern, and airy passenger terminal building and a parking garage with more than 12,600 spaces. The plans included two additional runways, as well as new roads and bridges that connect to local highways.

The entire facility was built as a single, common-use resource with information technology and telecommunication serving as major enablers. "In the past, airports were designed intrinsically for passenger comfort as opposed to airline and airport efficiency," says James Burke, GTAA Vice President, IT&T. "We needed to combine all those issues into one. Integral to our vision is the ability to develop a dynamic and pervasive technical infrastructure that will enable a more modern approach to communications."

CHALLENGE

Airports and airlines often run the risk of operational and competitive disadvantage due to multiple, disparate environments that cannot keep up with industry evolution. GTAA wanted its new integrated network infrastructure to fulfill two objectives. First, the network would provide complete wired and wireless connectivity throughout the entire airport property, which spanned about a five mile by five mile area. Next, GTAA wanted an infrastructure that would accommodate not only the applications needed today but would bring forward future applications needed by the various users of the airport without requiring the reinstallation or separation of existing wires in particular clusters.

"IP would be the common fabric," Burke says. "We wanted to integrate IP throughout the entire airport, first for our own internal operations, and then ultimately for our customers and passengers to use."

"In a traditional environment, opening a new gate can often be a very difficult process," says John Segaert, general manager, hub development for Air Canada in Toronto. "All elements, including the PCs, software, and the infrastructure, must be deployed. For example, if we need to put in a new counter, we have to run wires from a telecom closet, assuming we have a telecom closet nearby."

In the common-use environment, all communication and application services would be provided for the airlines at Pearson, enabling them to set up operations efficiently and cost effectively. "Telephone is available to them, as are basic computing, tickets sales, and check-in facilities," Burke says. "Even the self-service check-in kiosks are made available to the airlines. That simply becomes part of the basic negotiation for moving new people into the airport or moving them from terminal to terminal. That hasn't occurred before, to my knowledge."

SOLUTION

Toronto Pearson's new integrated network infrastructure runs on two independent dense wavelength-division multiplexing (DWDM) rings with Multiprotocol Label Switching (MPLS) and SONET services layered to provide high reliability and scalability for accommodating increased traffic and new IP applications. IP telephony and wireless technologies were critical to the operational flexibility of the common use environment, enabling the following actions:

- *Flexible Gates*—Common-use terminal equipment and integrated IP telephony enable GTAA to offer multi-airline gate use. "When an agent closes out a flight, another airline can come in and use the same gate with both voice and data services customized for that airline," says Burke.
- *Self-Service Kiosks*—Fixed and wireless networking enables passenger check-in and ticketing, which improves passenger flow and space utilization. Travelers can use any available airport kiosk to check in for any flight on any airline. "That means we can disperse travelers and avoid congestion within the terminal," Burke says.
- *Wireless Networking*—The wireless LAN extends the reach of the network, increasing operational flexibility and providing access to applications, data, and emergency response. "Access points are severely restricted and tightly controlled within the terminal itself," Burke says, adding that he has not encountered any airport tenant airlines that were reluctant to put data onto the network.

The network is a critical component of the airport security capabilities. By delivering video over a standards-based network, a single video stream can be viewed by multiple parties at the same time, enabling video surveillance and providing access to real-time critical information from anywhere in the terminal. Standards-based technologies improve the ability to rapidly and securely share data, voice, and video communications.

The scalable network enables GTAA to support lower bandwidth devices, such as bar code scanners used to track bags, as well as high-bandwidth applications, such as video surveillance, without straining the system or compromising quality of service.

RESULTS

A single, multiservice communications environment integrating network resiliency and responsiveness enables enhanced passenger, baggage, and network security, improves operational efficiency and flexibility, and reduces costs. Applications made possible by the new network provide differentiated services, improve competitiveness, and enable new revenue sources.

"People must be mobile," Burke says. "The way to get mobile is to use IP and wireless. And security and data integrity must be commonplace. We've got all of that here. And I know that when other airports look at this, when they recognize that they can make life better for themselves, for their tenants, and for the traveling public, this business model will attract a lot of attention. It already has."

Following are a few examples of the benefits Toronto Pearson International Airport has realized:

- *Increased capacity.* Almost immediately after implementation, passenger throughput was increased by 15 percent.
- *Reduced costs*. By utilizing the communications infrastructure for different applications and different user communities, deployment and maintenance costs are reduced.
- *Consolidated support*. Prior to the integration, two separate support groups were required to maintain the diverse networks. Now, voice simply becomes another application running on the data network and can be effectively managed by one consolidated team.
- *Improved operational efficiency.* Baggage reconciliation and tracking have made it easy for baggage handlers to match bags with the airline and destination.
- *Enhanced security.* From enabling the protection of business operations to enhancing the safety of passengers and cargo to integrating multiple layers of network security, Toronto Pearson is a secure and protected workplace.

"Cisco has played a very important, supportive, and defining role in the network design and implementation," Burke says. "Cisco took the time to understand our business and can actually represent us in meetings when we're not there. It's been a great advantage having Cisco on board with us."

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

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