Award-Winning Airport Succeeds with Cisco

Customer Case Study

Flughafen Zürich AG chooses Cisco to help insure and maintain pre-eminent position in European and global air transport

EXECUTIVE SUMMARY

Customer Name: Flughafen Zürich AG

Industry: Travel and logistics

Location: Switzerland

Number of Employees: 1500

Challenge

- Providing secure, high-speed infrastructure with best possible standards of network availability
- Helping ensure users and partners can access their applications and provide excellent 24-hour customer service

Solution

- Cisco Borderless Network with Catalyst 6500 core switches and Catalyst 2960 access switches
- Cisco Unified Communications Manager (UCM) servers running IP Telephony
- Twin Cisco Nexus 7009 and Nexus 5548 data center switches

Results

- Virtually uninterrupted high-speed service to hundreds of partners, thousands of devices, and tens of thousands of airport staff
- Significant contribution to recognition of Zürich Airport as Best European Transfer Airport and second-placed Best Airport in the World
- Best practice risk mitigation in the highly-regulated and closely-observed global travel and logistics industry sector

Challenge

Zürich Airport is not only the main gateway to Switzerland and the Northern Alps, but is also a major international transit hub in its own right. The public/private company, Flughafen Zürich AG, with around 1500 employees operates the airport. Together with 270 business partners and their 25,000 employees, Flughafen Zürich AG ensures the infrastructure functions smoothly and efficiently for all staff and users of the airport.

Of the more than 24.3 million passengers who used Zürich Airport in 2011, around 34 percent were passing through on their way to other international destinations. Those passengers travelled on more than 200,000 European flights and nearly 30,000 intercontinental flights.

Working silently and unseen, the airport's network tirelessly supports the whole operation. In such a critical environment, slow applications response times are unacceptable, and downtime is unthinkable. But it was not always so. Until 10 years ago, the legacy network was nowhere near the standard that such a flagship airport demands. "That's why we have worked in partnership with Cisco Systems since 2002," says Peter Zopfi, appointed in 2001 as Head of Communication Engineering at Flughafen Zürich AG.

Solution

The problem in such an intense environment as Zürich Airport is that, along with operational applications such as business administration and video surveillance, the network has to meet the needs of the airport's business partners. It would be chaotic and highly-disruptive for every one of the approximately 200 on-campus partners to each have its own network.

The original approach to this problem, adopted in the airport's legacy network, was to set up virtual local area networks (VLANs) operating at Layer 2 of the OSI stack. Each separate organization sharing the network had its own VLAN (like having its own private network). The main problem with this arrangement was that it was insecure. Not only might it be possible under certain circumstances for data on one VLAN to be accessed from another, but also viruses and other network-borne contagions could jump from VLAN to VLAN. Furthermore, an issue inherent in such architectures is broadcast-storms soaking up network bandwidth with wasteful and unnecessary address checking.

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Peter Zopfi
Head of Communication Engineering
Flughafen Zürich AG

The Cisco solution was to create a campus-wide multi-protocol label switching (MPLS) network using 24 Cisco Catalyst 6509 Series Switches in the core, all equipped with the Supervisor Engine 720. This arrangement allowed the creation of VPNs operating at Level 3 of the OSI stack. These VPNs are inherently segmented by the unique label coding of individual data packets, making it impossible for crossover between individual VPNs.

Furthermore, this architecture enables full 10Gbps and above bandwidth within each VPN, extended to the 13,000 active ports at the network edge by some 700 Cisco® Catalyst 2960 Series Switches. Network security is reliably maintained by virtual firewalls in the Catalyst 6509 Series Switches, centrally managed by Cisco Firewall Service Modules (FSMs).

"One needs to remember that partners such as Swissport are an intrinsic part of an airport's value chain, offering services like baggage handling and check-in," says Zopfi. "So providing anything less than top-quality and top-speed network facilities to them would jeopardize the entire airport's performance."

As well as the campus network, the Cisco architecture extends to Cisco Unified Communications Manager (UCM) servers running IP telephony for voice communications, with Cisco 7000 Series IP Phones installed at about 2000 end-points in areas such as offices and check-in desks. The UCM servers also offer IP Contact Center (IPCC) facilities, which are used to provide an IT support helpdesk and an emergency contact center.

The latter is brought into service on fortunately very rare occasions, for example, in the event of a crisis or an accident. Staffed by 200 trained volunteers, from Flughafen Zürich AG and partners such as Swissport and Swiss International Air Lines, the emergency contact center is a virtual facility that can be brought into action in minutes.

The airport's two data centers are geographically separated for business continuity reasons, running on Cisco Nexus® 7009 and Nexus 5548 Series Switches for maximum performance. VMware virtualization is being introduced to gain greater flexibility and reduce carbon footprints.

Wi-Fi service is provided by some 350 Cisco Aironet® 1142 and 1262 wireless access points with duplicated Cisco 5508 wireless controllers. In certain areas, Cisco Aironet 3500 CleanAir® wireless access points are used to combat radio frequency pollution from other devices. Free public Wi-Fi will be introduced shortly to meet popular demand.

A modern airport relies on its wireless LAN services so that, for example, air-side staff can access baggage handling systems. In fact, the Swissport services company has 150 wireless clients. Mobile VPN access for laptops is enabled with Cisco AnyConnect® soft clients, terminating on a pair of Cisco ASA 5520 remote access firewalls offering one-time password authority and user authentication.

"The great thing about Cisco wireless technology is that it's fully integrated with the LAN and security environment at the switch level," says Zopfi. "The two domains act seamlessly as one, and there's no need for expensive integration or backhauling of data."

Results

In many respects, Flughafen Zürich AG acts as a service provider. Its partners, including airlines, agents, and retailers, do not get their network facilities for free, of course. So they need to know that they are getting value-for-money. Any commodity supplier could install inexpensive switches and poorly-featured software. But in an airport environment, reliability and security come right at the top of the value-for-money agenda, significantly ahead of cheapness.

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The Cisco network maintains assured connectivity for hundreds of flight information display screens (FIDS), hundreds more IP CCTV security cameras, and thousands of common user terminal equipment (CUTE) devices. Connectivity also supports more than 100 high-speed VPNs for partner companies along with a large range of applications traffic, from Microsoft Office and Microsoft Exchange to SITA air transport applications and booking systems.

Naturally enough, the network's quality of service (QoS) functionality gives priority to time-sensitive traffic such as video, voice, and mission-critical business applications; while email and Internet browsing, for example, are slotted in between to offer a cohesive user experience.

Zürich Airport received the award for Best European Transfer Airport in the 2011 Business Traveler Awards, and received second-place in the Best Airport in the World category. "I chose Cisco, because its products carry on working, day-in day-out, year after year," says Zopfi. "In my job I have to manage risk down to the tiniest levels. When you've got planes taking off every two minutes there's literally no margin for error. Our partnership with Cisco means I get to sleep at night."

For More Information

To learn more about Cisco Borderless Networks go to www.cisco.com/go/borderless

To learn more about Cisco Collaboration go to www.cisco.com/go/collaboration

To learn more about Cisco Data Center go to www.cisco.com/go.datacenter

Product List

Borderless Network

- Cisco Catalyst 2900 and 6500 Series Switches
- Cisco Aironet 1142 and 1262 Wireless Access Points
- Cisco ASA 5520 Adaptive Security Appliance
- Cisco Aironet 3500 Wireless Access Points with Cisco CleanAir technology
- Cisco 5508 Series Wireless Access Controllers

Unified Communications

- Cisco Unified Communications Manager
- Cisco Unified IP Phones 7000 Series

Data Center

- Cisco Nexus 5548 and 7009 Series Switches

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