Solution Overview

Cisco Intelligent Airport Solution Improves Security and Operations, Increases Revenue, and Reduces Costs

Challenge
In an address at the General Meeting of the International Air Transport Association (IATA) in Washington, D.C. in June 2003, Airports Council International (ACI) Director General Robert J. Aaronson noted that recently the demands of airport users had changed dramatically. “Almost overnight the emphasis changed from pushing for more capacity to appeals for reductions in charges,” Aaronson said. “While many airports have provided financial relief to airlines and concessionaires, this is not possible everywhere due to the significantly higher costs incurred for expanded security, revenue losses due to lost business, and a number of other constraints.”

Aaronson called upon airports and airlines to “work as partners to surmount the worst crisis in aviation history. Airport operators must play their part in overcoming today’s extreme difficulties while retaining the financial strength and entrepreneurial vision to offer new capacity when traffic rebounds.”

Although the beginnings of an industry turnaround are underway, decreased passenger traffic, compliance with budget cuts, consolidations, and federal mandates are forcing operators to improve operational efficiencies. Airports must find ways to provide a flexible environment that supports the changing needs of the major carriers while responding to the needs of emerging low-cost carriers.

Adding to this already formidable list of challenges, passenger expectations are also on the rise. Business travelers, who are expected to maintain the same levels of productivity on the road, are demanding a virtual business environment. And although passengers acknowledge the need for increased security, delayed boarding, canceled flights, and long waits have created an environment of passenger dissatisfaction.

Airports are trying to meet these needs by improving overall operational flexibility, increasing customer services, and enhancing security, but face challenges such as inflexible resource allocation, limited ability to expand space, and multiple legacy networks that prohibit interoperability and scalability. Airport executives require a new and integrated approach to managing these challenges; however, their level of success depends upon the right strategy and the right business model, supported by an enabling, flexible, and scalable infrastructure.
Solution

To gain the benefits of integrated resources, Cisco Systems® has designed an intelligent information network called Cisco Intelligent Airport solution designed specifically for the air transportation industry that enables services and applications. Rather than requiring a whole new network build-out, Cisco network solutions and architectures use airports' existing data and voice network investments and support a cost-effective migration to a common, intelligent information infrastructure. Based on open standards, Cisco Intelligent Airport solution securely connects airport, airline, and other tenant operations to provide a cohesive, resilient, and responsive airport operating environment that enables the following solutions:

Flexible Gates and Flexible Check-In

Widespread increases in queuing and processing times are a well-documented frustration for airports, airlines, and passengers. Increasing the flexibility of resources can help alleviate this problem and allow gates, ticket counters, and baggage areas to be shared by multiple carriers, as needed. Several of the Cisco Communications solutions for operational flexibility enable common-use environments that provide efficient utilization of check-in, gate, and baggage processing resources. A truly flexible common-use model depends on an intelligent, unified, IP-based network that instantly provides data, voice (telephony, public address), video (surveillance and broadcast), and other services to authorized users throughout the facility. At airport gates, a secure IP network with IP telephony enables flexibility to an extent that was not available in the past. For example, when an airline's gate agent checks in at a gate for a new flight, the gate displays, printers, phones, and other networked devices are automatically provisioned for that flight. This enables airports to create a more flexible environment for gate and check-in spaces for airline tenants and provide the carriers with differentiated communications services, meeting the unique needs of each airline. This architecture also allows the airlines to add their own unique solutions to differentiate themselves further.

Physical and Network Security

Many airport security systems are based on incompatible applications that require manual coordination between alerts and alarms. By network-enabling these systems and carrying information over a common, standards-based communications infrastructure, airports can correlate security information in real time and base immediate action on the totality of any situation. Cisco provides a robust network infrastructure that enables the integration of video surveillance, other physical security devices, and devices for emergency response and communication throughout the airport. Voice, video, and data exchange is enabled across all these types of devices, whether they use wired or wireless connectivity.

Network security features manage intrusion detection, encryption, virtual private networks (VPNs), access control, port identification, and firewalls. The Cisco Security Solution builds on the security, scalability, and reliability of Cisco's network infrastructure to extract the full potential of an airport's network investment.

Public Wireless Internet Access

Airports have always strived to make the passenger experience as smooth and convenient as possible. With business travelers spending more time in airports than ever before as a result of more stringent security requirements, this becomes even more critical. The Cisco Mobile Office: On the Road solution enables airports to easily and cost-effectively provide host-neutral Internet access to passengers, while delivering the security and performance that mobile professionals demand. The Cisco solution enables the airport to deploy a single wireless infrastructure
throughout the airport that enables multiple Internet service providers to offer their service, thus giving passengers a choice. This solution includes a variety of network technologies that can be deployed in airport gate areas as well as other public locations, such as airline lounges, hotels, and restaurants on airport property. This same wireless LAN infrastructure can also be securely extended to support the mobile computing needs of the airport, airlines, and other tenants.

Business Benefits
Cisco Intelligent Airport solutions improve the utilization and effectiveness of resources in safely transporting passengers and cargo through the airport facility. They also enable operators to create new revenue opportunities—transforming their businesses into service-centric environments.

Flexibility and Operational Efficiency
A flexible gate and check-in model, enabled by Cisco Intelligent Airport solutions, maximizes both the usage and the management of airport resources. The operational flexibility benefits of shared use facilities include:

- Enabling the use of remote kiosks or mobile devices for passenger check-in, thereby removing the limitation of a single, potentially overcrowded location to process passengers
- Increasing customer service by reducing passenger wait times through improved passenger and baggage flow
- Maximizing use of scarce gate resources by improving communication services which enable more rapid aircraft turnaround

Customer Service and Enhanced Revenue
The Cisco Mobile Office: On the Road solution provides airports with the tools necessary to provide a reliable, manageable, wireless LAN environment that delivers:

- User convenience. Passengers can access the Internet through a choice of service providers in convenient locations throughout the airport
- Revenue-generation. The solution enables the airport to act as an internal service provider for its airlines, emergency personnel, and for its tenants—including campus hospitality, food service, and retail outlets—providing a new and steady revenue source for the airport
- Improved customer service. The new IT infrastructure enables the airport to increase speed, punctuality, and act as a reliable partner for its passengers, freight distributors, and airline companies

Secure Facility and Network
A safe environment and protection against network security breaches are critical priorities for all airports. The Cisco Intelligent Airport solution provides:

- Integration of disparate surveillance, physical security, and building management systems enabling improved decision making and response to security and other emergency situations.
- Real-time communication of security and emergency video or data to multiple destinations, such as operations centers, airport executive offices, mobile to airport police, and first responders. Emergency notifications can be directed to multiple networked devices, including desktop PCs, IP telephones, flight or baggage information displays systems, and public address systems.
• Ease of retrieval, storage, and archiving to facilitate event reconstruction and correlation, simultaneous recording and monitoring of multiple video streams, multiple monitoring stations for a single video feed, and video distribution to multiple devices.

• Improved protection of sensitive data, response to network threats and compliance with safety and security regulations.

Maximized Return on Investment

The Cisco Intelligent Airport solution is based on highly adaptable and scalable network architecture that provides airports with the greatest level of control over their ever-expanding and ever-changing environments, while leveraging their existing investments. Advantages of this standards-based, flexible architecture include:

• **Customizable architecture:** Based on network design, operations, and management that enable airports to leverage existing infrastructure investment and support diverse applications, network, storage, and server environments.

• **Modular Network Deployment:** Provides the greatest possible level of flexibility based on a comprehensive set of tightly integrated hardware and software.

• **Scalable:** Designed to support constantly changing business requirements that enable a continuously expanding suite of intelligent, application-enabling network services.

• **Tightly Integrated Features:** Availability, quality of service (QoS), embedded security, and manageability are tightly integrated with intelligent network services, such as voice, security, and mobility, to deliver highly optimized applications.

Architecture

Many airports operate with multiple, disparate networks resulting from years of working with multiple vendor systems and patching the networks together. Too often, the result is poor interoperability, expensive maintenance, and a lack of scalability rather than improved efficiency. Most airports today support multiple networks and network standards for voice, video, and data which require a different point of investment, have different life-cycle needs, employ different standards, and require varying levels of support expertise. Adding further complication, airports, airlines, and other tenants make independent decisions for networks for different applications, as shown in Figure 1. These categories include a security network; the airport’s own system that encompasses its operations, back-office systems, and other functions; and separate networks for the individual airlines. This model is costly, inefficient, compromises network security, reliability, flexibility, and is difficult as well as extremely expensive to scale.

However, as shown in Figure 2, all of these systems can be run over a common infrastructure benefiting from Multiprotocol Label Switching (MPLS), VPN, and other technologies that enable high performance and extremely secure networks for all airport tenants. Rather than require individual network investment by each department, tenant, or airline, the network provides voice, video, data services, and all services run over the common network that supports security, operations, and the airlines. In addition to improving the cost-effectiveness of the network, the solution also presents an additional source of revenue for the airport by provisioning new, fee-based services to its tenants.
Intelligent Information Network

Due to fluctuating budgets, physical space limitations, and the investment they have already made in network infrastructure, airports and airlines today can’t afford to take significant business risks. However, infrastructure that consists of disparate IT network elements significantly inhibits the ability to improve, creating functional silos of information, redundant applications, proprietary airline systems, different network protocols, and costly, complicated network design and deployment.

To gain the benefits of integrated resources without the setbacks of multivendor point solutions, Cisco enables convergence of disparate networks onto an intelligent information infrastructure. The Cisco network architecture for the air transportation industry is a cohesive, resilient, and responsive foundation that lets administrators centrally provision, deploy, and maintain advanced transportation applications.

This integrated network supports voice, video, and data so airports can continue to use existing networks while deploying and integrating new applications. Converging network resources also improves operational efficiency and support for innovative customer services that drive new revenue streams. Finally, total cost of ownership (TCO) is minimized because common network standards require less staff for management and maintenance than multiple networks.

Supporting Solutions or Products

- **Multiservice network core and edge devices** enable migration to a high-bandwidth, highly reliable, converged network that provides connectivity throughout the entire airport facility. This protects current investments with a standards-based, flexible IP/MPLS architecture and builds new services for airport tenants. At the network edge, networked devices, such as terminal, phones, displays, printers, cameras, at an airport gate, can be easily connected to the overall airport network.

- **Cisco IP Telephony** integrates with common use airline passenger processing systems to allow a single login for both data and voice services. Cisco IP telephony also integrates airport and existing airline private branch exchange (PBX) phone systems to enable custom phone services for each airport tenant.

- **Cisco End-to-End Wireless Networks** provide security, manageability, scalability, and reliability, enabling secure access to both public and private network services, even in areas inaccessible to network cabling.

- **Cisco Virtual Private Network (VPN) Solution** offers secure data, voice, and video communication, with QoS guarantees, delivering secure connectivity so that airport tenants can access their own systems, and airlines can access their host systems, without worry of security breach.

- **Cisco Network Security Solutions** include firewalls, intrusion detection systems, authentication services, and network security management services which protect data and network access.

Why Cisco?

Many vendors in today’s marketplace will offer discrete niche products that solve a specific problem on the network. As a result, organizations experience less consistent network and application performance and must pay more for system maintenance because the lack of rich, integrated network features and services and network intelligence, prevents the network from operating as a unified system. Point systems also suffer from other challenges, including:

- Difficulty in protecting the entire network from outages, service degradation, and security breaches
- Inability to adapt to existing infrastructure or offer the scalability necessary to meet changing business requirements
Lack of a “best practices” track record in network deployment and management, driving up cost and complexity over the long term

Difficult and cost-prohibitive upgrades, modifications, and management

Traditional networking vendors boast an end-to-end solution made up of interconnected boxes that are generally an outgrowth of their existing systems. The challenge of this approach is that the performance and availability are typically set by the weakest network component.

In contrast, Cisco delivers an intelligent, truly integrated (both wired and wireless), end-to-end network solution that enables the network to work as a unified whole, with consistency in both features and quality, improved reliability, an enhanced user experience, and high-quality performance. A more cohesive network results in more cohesive operations.

Only Cisco has the networking depth and breadth required to optimize the components that make up the infrastructure so that they work as a unified system throughout the organization and across an organization’s extended infrastructure. In addition to boosting network performance, network elements are interlocked through integrated network protocols and network intelligence.

Equally important, a Cisco converged network provides the lowest TCO through:

- **Reduced hardware costs.** A highly optimized network reduces the need for multiple proprietary networks, reducing hardware costs as a result. For example, a single Ethernet card can replace three separate cards, reducing cost and complexity.

- **Reduced software and training costs.** Expanding intelligent network services paves the way for innovative transportation applications to be deployed without requiring network operators to replace or learn new operating software, reducing software and training costs.

- **Reduced troubleshooting.** Multilayered security closely aligns people, procedures, and technology with business goals, which reduces troubleshooting due to security breaches. In addition, a highly reliable network reduces administrative troubleshooting and down-time costs.

**For More Information**

For more information about Cisco Intelligent Transportation Solutions, contact your local account representative or visit: http://www.cisco.com

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