

Solution Brief

SITA SC Partners with Juniper Networks to Optimize Air Transport

Like the air transport industry it services, SITA knows first-hand what a challenge it is to remain competitive. Formed by a group of airlines in 1949 to provide them with global information and communications services, SITA has had to adapt to changing business and technology landscapes. Where once it supported clients via a private worldwide network running proprietary protocols, it now provides information and communications services, many of them IP-based, at the most competitive rates.

As a non-profit, commercially managed company, SITA focuses exclusively on the air transport industry. Its mandate is to provide clients with solutions that reduce the complexity of managing and integrating communication infrastructures, thus reducing clients' total cost of ownership and improving their return on investment.

“When we first tested the WX devices, we saw a tremendous increase in bandwidth from compression, which really sold the technology for us. We took advantage of Packet Flow Acceleration technology to tackle latency and speed up application performance on our WAN links, which increased our customer satisfaction.”

Network Manager
International Airline

It's a tall order, given that SITA's 1,800 clients – which include airlines, airports, aerospace companies, and logistic and travel distribution organizations as well as international and regional non-government organizations such as Customs, the United Nations, and the Red Cross – operate on thin margins and limited IT budgets. The air transport industry is particularly susceptible to business cycles and is facing fierce competition.

Consequently, SITA is continually looking for opportunities and innovative solutions to help its clients do more with less. And because SITA customers require simplification for the end-to-end management of their telecommunications systems, SITA is creating value-added services, including an Integrated Traffic Management Service. This service is available for customers of any wide area network (WAN) provider and is complemented by a range of highly skilled professional services.

The new SITA Integrated Traffic Management Service is built around the Juniper Networks' WX™ and WXC™ application acceleration platforms, which combine next-generation compression with traffic-control functions including bandwidth management, path optimization, and latency reduction. By instrumenting customers' WANs, SITA will reduce customer networking costs while maximizing performance and minimizing the bandwidth requirements of all traffic flows.

Air Transport Challenges

As the Airline IT Trends Survey 2004 observes, air carriers are operating in a highly competitive, volatile market and are under immense pressure to achieve profitability. The survey, conducted by SITA and Airline Business magazine, notes that airlines must increase efficiencies and reduce costs in order to remain viable. Airline CIOs see IT as an enabler of business transformation; however, airlines face a number of specific IT challenges.

The move to open systems

Historically, the air transport industry has relied on proprietary IT systems. For greater flexibility and cost savings, SITA clients are making a wholesale conversion to open systems, according to the survey, and migrating to IP-based applications and infrastructure. However, the transition will take time. According to the survey, nearly half of the world's carriers have IP-enabled the majority of their systems and another third will over the next few years.

The need to reduce voice costs

Airlines managing remote call centers are looking to deploy voice over IP (VoIP) to reduce their dependence on costly circuit-switched voice services and to optimize bandwidth usage on their intranets. Likewise, airports are looking to deploy VoIP. According to the 2004 survey of airport IT trends, 13 percent of respondents have already deployed a VoIP system, while another 60 percent plan to implement one in the next two years. In addition, more than 40 percent want to deliver real-time communications between airport tenants.

The push to improve customer service

Faced with stiff competition, airlines are looking to attract customers by improving the quality of the passenger experience – from booking to check-in to in-flight services. For example, roughly 15 percent of airlines surveyed indicated that they either currently offer in-flight Short Message Service (SMS) or e-mail services or will offer these by the end of the year, with 17 percent of respondents expecting to have such services within two years. The trend toward customer convenience in the air means that airlines need satellite networks that can deliver consistently reliable performance.

The reality of bandwidth constraints

While airlines and airports are looking to deploy new IP-based services and applications, they're faced with tight IT budgets and the challenge of operating in remote sites all over the world. Network costs in less developed countries are high, while link speeds rarely exceed 64 Kbps. Seventy percent of the links used by SITA clients are slower than 128 Kbps.

What the air transport industry needs is the ability to squeeze additional capacity out of existing network links to support new systems and applications such as VoIP. They also need control

mechanisms to ensure that new applications don't negatively impact the performance of other critical applications and that latency and packet loss don't affect applications such as VoIP and in-flight SMS and e-mail services.

In addition, SITA clients need the flexibility to supplement leased-line services with low-cost digital subscriber line (DSL) services that allow users to tap into web-based applications, virtual private networks (VPNs), or extranets, while preserving their leased services for mission-critical applications.

SITA Traffic Management Benefits Customers

The Integrated Traffic Management Service delivers substantial benefits to customers by combining SITA Professional Services, flexible carrier services options, and a strong technology partnership with Juniper Networks, which delivers leading solutions that accelerate the performance of applications over the WAN.

To ensure customers get an optimal solution, SITA Professional Services uses a methodology consisting of discrete phases, where each phase has its own deliverables. SITA Professional Services personnel have always remained close to their customer base. They understand better than anyone else the communication needs of the air transport industry. As a result, prior to delivering traffic management services, SITA Professional Services personnel perform an assessment ensuring that customer requirements and objectives, as well as traffic flow profiles, are well understood and documented.

Details gathered during the assessment are used to build a high-level technical design as well as a business case. These steps enable SITA to set the right expectations and demonstrate a solid return on investment. Since the information gathered during the assessment is unique to each customer's communication infrastructure and business requirements, SITA can deliver a design that ensures predictability in service deliverables and results.

Likewise, because of the unique nature of every client's business and infrastructure, SITA offers an unparalleled range of service options, giving clients the flexibility to choose services based on in-house skills, budget, assets, and service level expectations.

Starting in the fourth quarter of 2004, the SITA Integrated Traffic Management Service is available as a Professional Service in more than 220 countries. The traffic management offering is a managed service with the highest standards of availability and a single point of accountability.

The SITA-Juniper Networks Partnership

SITA provides the capability to integrate services from various partners with leading-edge technology, such as from Juniper Networks. A key benefit of the Juniper WX and WXC application acceleration platforms is that they let customers recoup capacity on their network links, enabling traffic loads to grow without having to purchase additional network bandwidth. Because of the savings they can achieve from compression and the simplicity of deploying the WX and WXC devices, many SITA clients have specifically requested them.

Juniper Networks' market momentum and willingness to work with SITA as a partner also helped cement the relationship. As part of their agreement, SITA is a Juniper global solution partner, and the two companies have preferred partner status with regard to the air transport industry and non-government agencies that SITA serves.

The WX and WXC platforms are an important component of the SITA offering. To ensure customers benefit from traffic management across their entire WAN infrastructure – regardless of whether it's provided by SITA and/or other service providers – SITA designs, deploys, and manages the WX and WXC platforms from the customer side of the network.

“We use the QoS and bandwidth-management features to give greater priority to applications, such as our reservation system. This prioritization ensures that we deliver the highest levels of customer service everywhere in the world.”

**Network Manager
International Airline**

These solutions enable SITA to reduce its clients' IT spending and optimize their networks as demands change, enabling them to adapt quickly to new circumstances and business opportunities. Through compression and traffic-optimization techniques such as bandwidth management, path optimization, and latency reduction, the WX and WXC platforms increase WAN capacity several-fold with minimal disruption to an existing network. For the air transport industry and other customers, this capacity gain translates to significant savings by eliminating the need for higher-speed links and router upgrades and the potential loss of business opportunities due to provisioning delays.

Not only do the WX and WXC platforms provide the bandwidth “headroom” for traffic growth and new applications, they also provide visibility into the WAN and the control mechanisms needed to tune the network. This ability to optimize the network for specific application traffic significantly improves network and application performance, resulting in greater business efficiency and direct cost savings.

With base licensing at 64 Kbps, the Juniper Networks WX 15 application acceleration platform is particularly attractive for the air transport industry. As with other WX platforms, the WX 15 provides advanced traffic optimization features but at a link speed and price point ideally suited to SITA clients. SITA has been involved in testing the WX 15 device and will be the prime service integrator to offer WX 15 platforms to air transport industry customers.

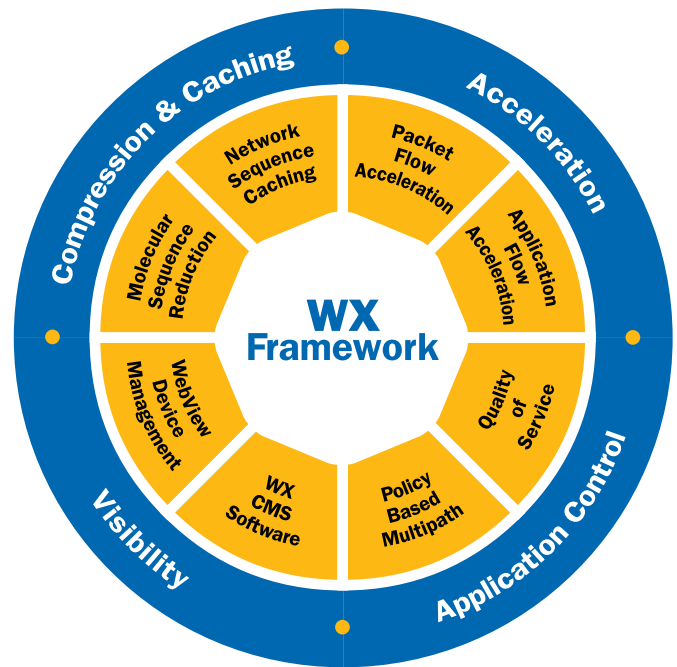
Juniper Networks Product Features

The WX and WXC platforms are based on the WX Framework™, which defines the specific attributes required to overcome the bandwidth, latency, congestion and manageability issues that impede application performance over the WAN. By incorporating the WX Framework, the WX and AXC platforms help SITA achieve the following for their customers.

Compression

The WX and WXC platforms deliver a multifold increase in bandwidth without a large investment. This immediate return on investment is important for SITA clients. According to the Airline IT Trends Survey 2004, respondents ranked short-term projects with proven cost savings as the highest investment priority for future IT projects.

The patented Molecular Sequence Reduction™ (MSR™) technology, a next-generation, dictionary-based compression algorithm that is part of the WX Framework™ available with every WX and WXC



The WX Framework integrates key technologies that work together and influence each other, providing IT with distributed stateful intelligence about their WAN links and applications.

Customer Success Story:

International Airline

Business Benefits:

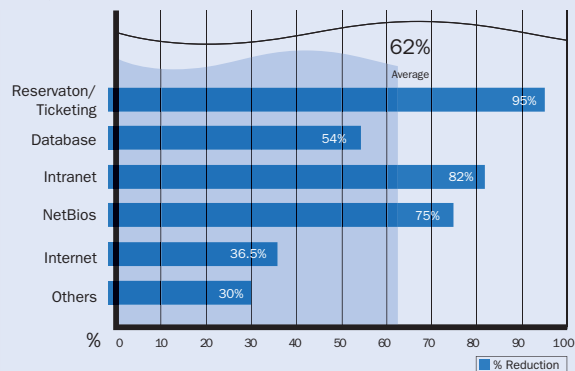
- Quadrupled available bandwidth to deploy new applications
- Increased reservation system performance
- Improved customer service at remote airports
- Avoided a 75% increase in WAN services costs
- Six-month ROI

Operating for more than 20 years, this international airline serves business and leisure travelers in more than 40 countries. With offices all over the globe, employees stay connected via a worldwide network managed by SITA. Many of these locations are in remote places where WAN service bandwidth is limited and costly.

As application performance and network bandwidth demands began to increase due to a larger number of networked applications and users in different countries, the performance of key applications began to deteriorate, including database, Citrix, intranet, and most importantly, the reservation and ticketing system. The airline needed an economical solution

to meet its application performance and bandwidth needs to ensure consistent application performance everywhere.

As an alternative to deploying additional WAN bandwidth, which would have nearly doubled its recurring monthly expenses for WAN services, the airline evaluated WAN optimization solutions. After thoroughly researching the market, the airline deployed Juniper Networks WX application acceleration platforms, which more than doubled bandwidth capacity and vastly improved the performance of all applications and provided an ROI of six months. With the new capacity, the airline is looking at VoIP to headquarters, remote sites, and call centers.



platform, routinely provides a two- to four-fold or greater increase in WAN capacity. Using a dictionary of patterns and operating in memory, MSR compression recognizes repeated data patterns and replaces them with labels, dramatically reducing WAN transmissions.

The degree of compression varies by customer. Based on the applications in use, SITA has already gained significant experience in profiling ATI communications and is continuously building on this base. SITA customers benefit from this experience during all phases of an assessment. Based on those assessments, SITA Professional Services will help each customer to create a realistic business case for the introduction of the WX Framework technologies. By “reclaiming” bandwidth, the WX and WXC platforms enable customers to roll out new applications without the need to upgrade WAN links. This bottom-line benefit is key to SITA clients, for whom reducing costs is imperative.

Bandwidth management

As SITA clients deploy new applications, they need tools to ensure that these applications get the bandwidth and treatment they need to operate over the existing network. For example, applications such as VoIP need a minimum bandwidth level and bounded latency to be usable. Likewise, as additional applications are rolled out, clients need the ability to prioritize applications to ensure that mission-critical traffic isn't crowded out.

The WX and WXC platforms offer easy-to-use bandwidth management capabilities, which encompass Quality of Service (QoS) as well as bandwidth allocation features. These capabilities allow customers to prioritize business-critical and latency-sensitive applications and allocate bandwidth to specific applications. What sets this QoS implementation apart from router-based QoS is the ability to apply QoS based on application-level (layer 7) information. Advanced traffic classification for URLs and Citrix, for example, is difficult to implement in a router, so service providers are unlikely to support it.

The fine-grained classification employed by the WX and WXC platforms enables them to distinguish between Citrix print jobs and, say, an ERP application running under Citrix, ensuring that ERP applications, SQL transactions, and other mission-critical traffic gets higher-priority service from the network than non-critical traffic.

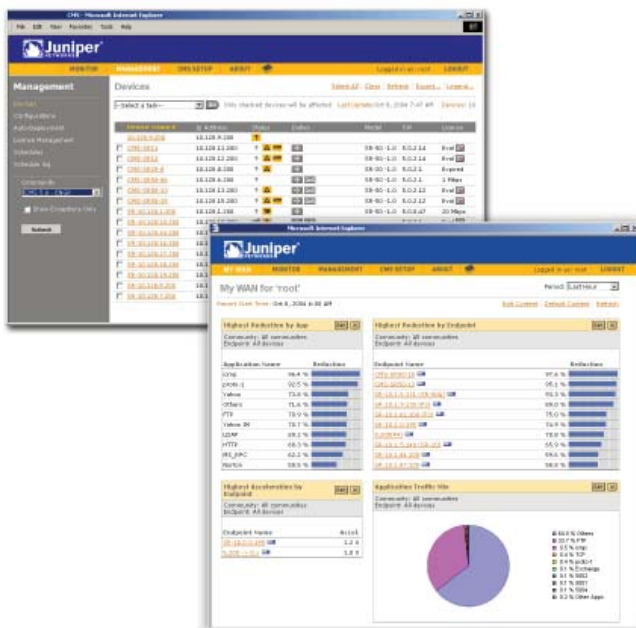
A key advantage of the WX and WXC platforms' bandwidth management capabilities is that they preserve the richness of IP-based class of service markings, often in the form of Differentiated Services Code Points (DSCPs), in customer traffic, and provides a mapping between these markings and the QoS treatment provided by service providers. In this way, the different DSCP values for VoIP bearer and signaling traffic, for example, are preserved across the WAN link, ensuring that LAN equipment has the information it needs to expedite voice traffic.

Path optimization

The fine-grain traffic classification used by the WX and WXC platforms is also a benefit to customers who want to exploit the WX Framework's Policy-Based Multipath™ (Multipath™) optimization capability. Several SITA clients have already expressed interest in this feature, which allows them to specify which WAN links particular applications should use. With the Multipath feature, customers can reduce their communications costs by having critical traffic use the private network, which is well known and managed, and having less critical traffic use the Internet.

While this function would be complicated to implement with a WAN service provider, the WX platform is able to identify application traffic and direct it to the appropriate WAN link. In addition, the Multipath feature monitors the performance of each path and automatically diverts applications from one path to the other if performance no longer meets acceptable levels.

Latency reduction. With operations all over the world, SITA clients must rely on WAN connections of varying quality. Satellite links are common in many locations. The WX platform's Packet Flow Acceleration™ (PFA™) and Application Flow Acceleration™ (AppFlow™) technologies, two more components of the WX Framework, reduce latency and improve application performance over WAN links, which is a big plus for many SITA clients. For example, SITA has customers with circuits in Africa



Networkwide Visibility

The WX Central Management System (CMS) software provides unified, intelligent insight into application acceleration, compression performance, WAN utilization, QoS, and bandwidth allocation across the distributed enterprise.

that have significant latency problems. One SITA client, an airline manufacturer, is already evaluating the WX platform specifically for their latency reduction capability.

The Packet Flow Acceleration technology includes three basic components:

- Fast Connection Setup™ improves the performance of short-lived connections by eliminating one round-trip time from the TCP connection setup.
- Active Flow Pipelining™ (AFP™) terminates TCP connections locally and uses a more efficient transport protocol between WX and/or WXC devices.
- Forward Error Correction allows for the reconstruction of lost packets, limiting the need for retransmissions on lossy networks, such as satellite links.

“This new partnership, which will give significant operational and networking related cost savings, is another proof-point of our strategy to develop relationships with market leaders to design solutions that best fit our customers’ needs.”

Brijdeep Sahi
Vice President Marketing
SITA

The AppFlow technology augments the PFA technique with protocol-specific acceleration for applications such as Exchange, Microsoft file services, and web-based programs. The AppFlow feature pipelines multiple data blocks and web objects across the WAN, reducing wait times for multiple round trips to complete and improving user productivity.

Centralized management. SITA will leverage the WX Central Management System™ (CMS™) software in conjunction with other network management tools to ensure customers the highest reliability and uptime for the traffic management service. The WX CMS software allows SITA to easily configure and manage multiple distributed WX platforms from one central location, as well as automate the deployment of remote units.

In addition to configuration features and the ability to identify faults quickly, the WX platform performs remote packet capture and provides a series of reports. These reports include an Application Summary report showing the mix of application traffic flowing across the WAN and a Performance report that shows traffic latency and packet loss. The Top Talker Flow report indicates which desktops are generating the most traffic, while the QoS report shows the bandwidth levels allocated for each application and whether any application traffic is being dropped.

Ease of use, automated deployment, and visibility into application performance are among WX CMS software’s benefits for SITA. The WX CMS software’s ability to monitor WAN behavior and provide visibility into application performance is a real value for customers, enabling SITA to monitor clients’ networks without the need for other devices or monitoring tools on the network.

SITA SC and Juniper Networks: a Powerful Partnership

Given the challenges the air transport industry faces, SITA’s role is more crucial than ever. Through innovative solutions such as the Integrated Traffic Management Service combining flexible deployment offering, professional services, and Juniper Networks’ leading-edge WAN optimization technology, SITA will help its clients get the most from their information infrastructure. It’s a win-win situation for both SITA and its clients.



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