

Online Travel Distribution in Asia Pacific: A Study in Effectiveness

Part One: Airlines

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Table of Contents

Executive Summary	1
Section 2: White Paper Findings.....	2
Finding One: Network carriers slow to implement global best-practice	2
Finding Two: Discerning online travel suppliers set high standards	3
Finding Three: Network carriers care about global online competitiveness	4
Finding Four: Airlines that provide online services care most about end user experience	5
Finding Five: Page weights affect web site performance.....	6
Finding Six: Low-cost carriers have unique online distribution challenges	7
Section 3: Methodology	9
Section 4: Akamai’s Solutions for Travel Companies	10
Akamai Dynamic Site Accelerator	10
Akamai Web Application Accelerator.....	11
Why Travel Companies Choose Akamai.....	12
How Travel Companies Benefit.....	12
The Final Analysis: Profitability.....	13
About Akamai.....	14



Executive Summary

Estimated to reach US\$16 billion by 2006, online travel has become an extremely important channel for the Asian travel and tourism industry, and now accounts for 10% of the total travel market in Asia Pacific¹. This growth is mainly due to the burgeoning middle classes, reduced consumer security concerns, an expanding Internet population, and the advent of multilingual and intermediary travel Web sites.

In response to this growing opportunity, Asia Pacific airlines intent on delivering world-class e-commerce operations and innovative online service provisioning (bookings, e-ticketing, check-in etc) are investing in creating a first-rate experience for their customers. By turning to Akamai Technologies, they are able to extend their current Web infrastructure so that they can dramatically improve the user experience, grow market share, support new markets quickly and cost-effectively, and protect revenue during unpredictable Internet conditions.

Having already enabled e-business initiatives for many top travel-related enterprises, Akamai understands the intricacies of the online travel industry. The following are a sampling of the travel and tourism operators that Akamai works with in Asia Pacific:

- **Airlines:** AirAsia, Cathay Pacific, Emirates, Qantas, and Singapore Airlines
- **Hotels:** Accor, Millenium & Copthorne
- **Intermediaries:** Abacus, Flightcentre, Makemytrip, Openworld, Sino Hotels, Travel.com.au, and Zuji

This white paper highlights travel industry benchmarks for user experience and reliability, and offers insight into how airlines are raising the bar in travel e-commerce and online service provision. It also describes how Akamai solutions and services play a key role in improving travel companies' online sales and service initiatives.

"Increased site speed undoubtedly has been a major contributor to all of the beneficial effects we've seen on our sites over the past few months. Without Akamai, there is no way that a 100% increase in online bookings could have occurred."

 **CATHAY PACIFIC** —Scott Ohman, Manager E-Business Commercial

Typically when travel companies add interactive features such as video, interactive games, and Macromedia Flash features, they experience a slowdown in site performance and are forced to expand their infrastructure. However, with Akamai, travel companies can add these features and increase their site performance—without adding infrastructure. Says Keith Thomas, General Manager, Tourism New Zealand, "The number of users accessing our tourism Web sites has far exceeded expectations. Thanks to Akamai's on demand computing platform, we are able to offer our visitors a world-class interactive experience that provides a catalyst for increased tourism. At the same time, we are supporting our "100% PureNZ" brand. We could not have done all this without Akamai."

¹ A Strategic Analysis of the Asian Online Travel Market' EFT Research

Section 2: White Paper Findings

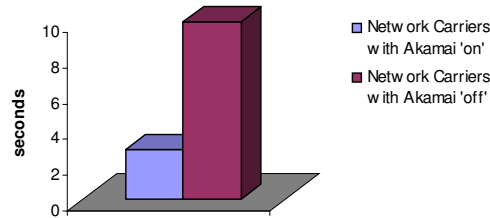
Finding One: Network carriers slow to implement global best-practice

Graphs below highlight that the 22 network carriers surveyed are far behind the generally accepted standards of site performance both in terms of download times (over ten seconds), and consistency (standard deviations above ten seconds). Moving customers online or delivering service online demands a consistently-trusting environment comparable to that engendered by a call centre, counter-top point of sale, or travel agent.

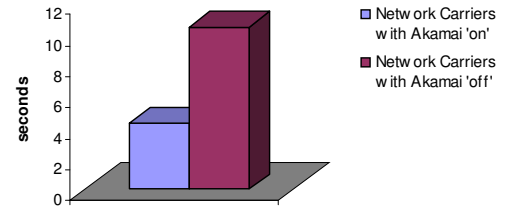
The results below in blue highlight that Akamai provides dramatic benefits in terms of page download times and availability (reliability), as well as significant improvements in the consistency of end-user experience.

Origin Download Time

Akamai reduces origin download time by 72%

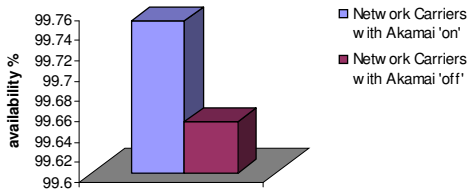


Akamai reduces origin standard deviation of download times by 59%

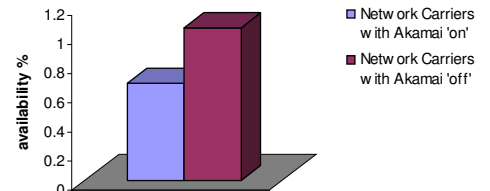


Homepage Availability

Akamai improves origin availability to 99.75%



Akamai reduces origin standard deviation of availability by 37%



"Within a few months of activating Akamai's Web Application Accelerator service, Cathay Pacific Airways achieved a 65% increase in global site performance and a 65% increase in site traffic without additional infrastructure—an estimated annual savings in infrastructure of \$1.5 million, and a significant increase in travel agent extranet adoption."



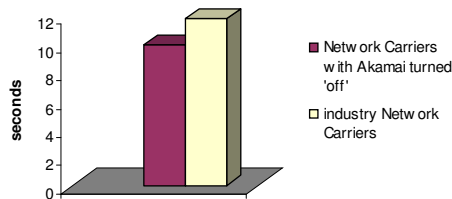
Finding Two: Discerning online travel suppliers set high standards

Characterized by a commitment to customer experience, brand consistency, and world-class service, Akamai’s network carrier customers have high expectations of their site performance. In fact, even before they turn to Akamai, they have taken measures to set their site performance apart from that of their industry peers (as show in the graphs below).

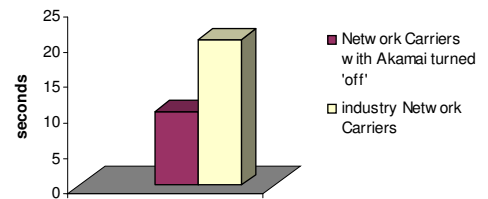
Origin Download Time

The origin environments of Akamai’s network carrier customers, without Akamai turned on², were 16% faster and 49% more consistent in terms of home page download time than their network carrier peers.

Network Carriers that use Akamai are 16% faster than those who do not use Akamai



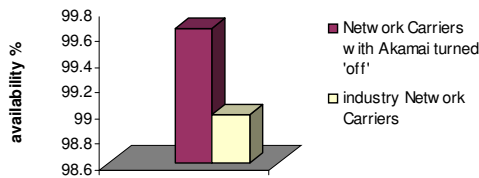
The standard deviation of download times for Network Carriers that use Akamai is 49% less than that of industry



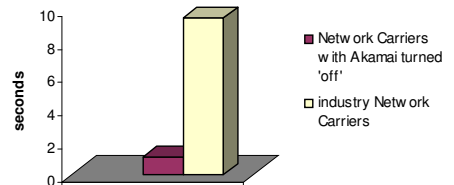
Homepage Availability

The origin infrastructure of Akamai’s network carrier customers, without Akamai turned on, registered 0.8% higher Availability and were 89% more consistent in terms of page download times than their industry peers.

Network Carriers that use Akamai have greater availability than Industry



The standard deviation of availability % for Network Carriers that use Akamai is 89% less than that of industry



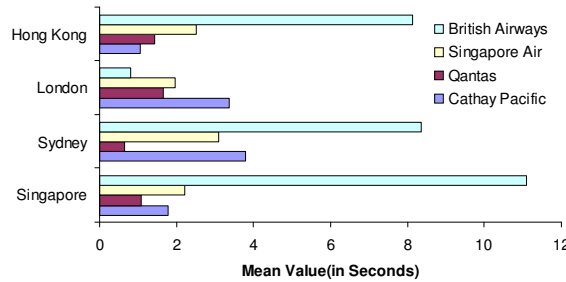
² Comparative tests conducted on origin environments of Akamai network carrier customers and compared to the origin environments of network carrier non-customers.

Finding Three: Network carriers care about global online competitiveness

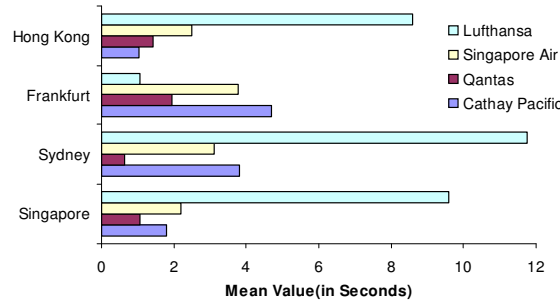
Online travel distribution is undergoing a sea change with suppliers increasingly moving to direct-to-consumer models. The network carrier segment, by the very nature of its intercontinental routes taps vast markets, has global distribution challenges, and competes with other 'home-market' network carriers on their turf. The graphs below compare home page download time in Asia Pacific and 'home' markets for non-Asia-Pacific network carriers.

The results below highlight two very important points for global online competitiveness:

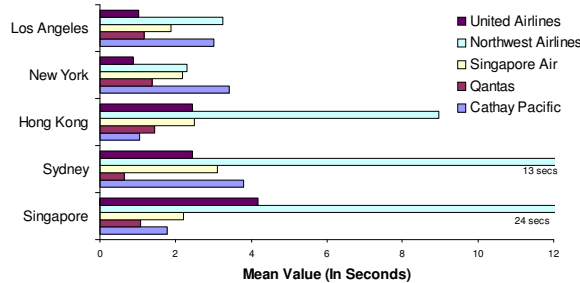
1. Asia-Pacific network carriers using Akamai perform **significantly better** than their global competitors in Asia-Pacific home markets; and
2. Asia-Pacific network carriers using Akamai perform **as well** as their global competitors in overseas markets (ie non-Asia-Pacific).



British Airways



Lufthansa



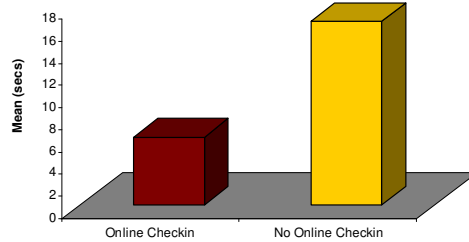
**United Airlines
Northwest Airlines**

Finding Four: Airlines that provide online services care most about end user experience

The Internet has afforded airlines the opportunity to provide post-sales, self-service options, including seat and meal selection, check-in, and boarding-pass printing. In addition, customers are empowered to redeem rewards online and interact with the frequent flier program. These online services strengthen the customer relationship while reducing the costs associated with service provisioning.

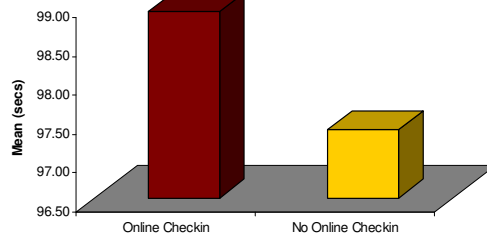
The results below demonstrate that network carriers³ who have a strong commitment to online service provisioning understand that download time and site availability and reliability are critical prerequisites for adoption of such services by their customers. Of the 26 network carriers surveyed, 16 offered complete online check-in for at least some sectors⁴.

Download Time for Network Carrier



Network carriers with online check-in performed 63% better on home page download time as compared to those without online check-in.

Availability of Network Carriers



Network carriers with online check-in registered a 58% improvement in availability as compared to those without online check-in.

Data collected also showed a 60% reduction in errors on frequent flier pages where online check-in was offered.

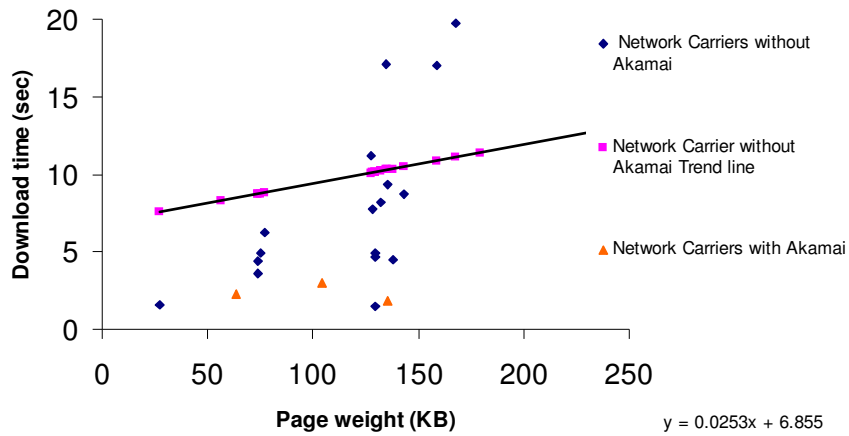
³ Results represent the entire network carrier sample, irrespective of whether Akamai is deployed.

⁴ Online check-in was used as a proxy for online service provision. Due to security concerns, some airlines offered such service only on certain sectors but were included in the online check-in numbers. Airlines that offered an 'e-check-in' service at an airport alone were deemed to not offer online services.

Finding Five: Page weights affect web site performance

One major factor in web site performance (reliability, performance & scalability) is total page weight. In a sample of 22 network carriers not using Akamai, home page download times degraded as page weight increased (see graph below). This result is in contrast to the network carriers using Akamai, who registered no performance degradation as page weight increased. The analysis indicates that as page weight rises from 75KB to 150KB, page download time will degrade by approximately 20% from 9 to 11 seconds.

Page Weight and Trend Analysis



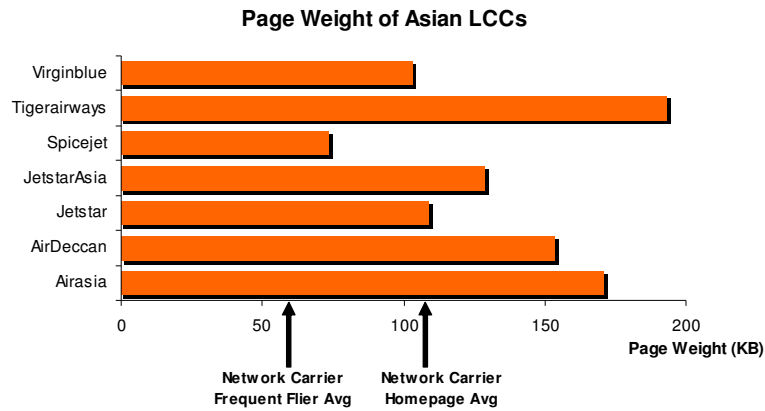
“Studies show a 50% degradation in download time will lead to a 25% reduction in conversion”



Finding Six: Low-cost carriers have unique online distribution challenges

Low-cost carriers (LCCs) behave like online retailers with heavier home pages, more embedded and interactive content

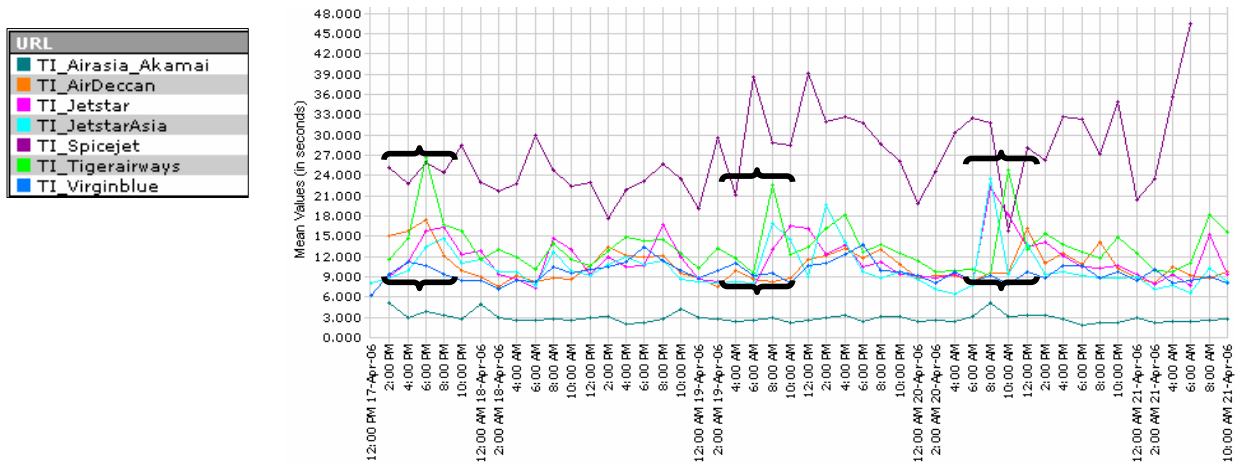
The graph below shows that LCCs deploy heavier home pages than their network carrier counterparts, likely due to the fact that LCCs offer and promote a range of products such as financial services etc. On average, LCC home pages were 20% heavier than those in the network carrier segment.



LCCs experience download time performance degradation during daily peak booking periods

The graph below highlights that between 2pm and 10pm Singapore / Hong Kong⁵ time, which is peak booking time, LCC home page performance degrades dramatically in terms of download times and the respective consistency. This could be due to application layer latency, Internet congestion, or peaks in end user traffic associated with bookings.

As shown, the average LCC home page download time without Akamai was 13.9 seconds, compared to 9.7 seconds for network carriers with Akamai. This highlights that, in general, LCCs are not as well equipped to support their regular traffic patterns, and are vulnerable to online customer dissatisfaction and abandonment.

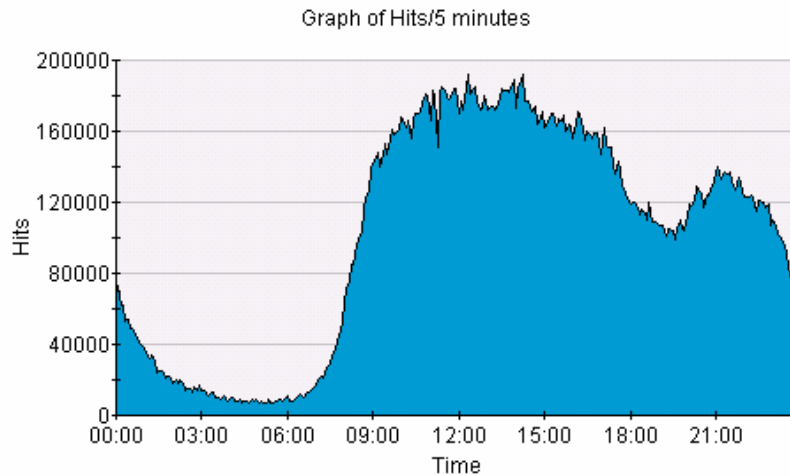


⁵ Graph shows GMT.

LCC performance degradation is due to origin infrastructure capacity constraints

The graph below highlights AirAsia’s HTTP request load on 19 April, 2006. On that date, AirAsia experienced an 8x increase in HTTPs and HTTP requests during the same time period as the LCC segment experienced the degradation in home page download time as shown in the graph above, in other words, during peak booking time. This traffic pattern is indicative of the LCC segment. Given that upwards of 70% of LCC revenue is derived online, this poor performance is a major inhibitor to capturing revenue.

Notably AirAsia’s web site represents best-in class for the LCC sector, as the site performed equally well during times of 8x normal usage patterns. Additionally this confirms that the cause of site performance degradation are related not to poor origin infrastructure, but to the inherent Internet bottlenecks, which in this case were addressed by deploying Akamai.



"During our 1 million ticket promotion our usage spiked to 5x our normal level. In the past we would have had to purchase excess infrastructure to be able to handle that type of customer demand. However, by leveraging Akamai's Secure Content Delivery service we were able to perform flawlessly without the need for additional infrastructure. Akamai has allowed us to increase our market share in each country we've entered online as they provide complete reliability and stability."



— Lau Kin Choy, Regional Director, IT, AirAsia

Section 3: Methodology

A series of concurrent tests were conducted by Akamai Technologies using Keynote Systems⁶ measurement tools during the period 16-21 April 2006. A total of 230,000 data points were collected.

The white paper provides data related to the Web site performance of the major network carriers and low-cost carriers (LCCs) in Asia, with and without Akamai’s services. The paper highlights performance in terms of five key variables:

- **Availability:** How often a site is ‘undeliverable’, indicating network, browser, or application errors
- **Download Times:** How quickly a full page downloads to a browser
- **Errors:** The number of unfulfilled Web server requests
- **Reliability:** How consistently the site performs, as defined by the standard deviation of Availability and Download Times respectively
- **Scalability:** How well a site performs during times of peak load (ref: Availability, Download Time, Errors and Reliability)

The sample group of 35 airlines was segmented into the three groups indicated below:

Network Carriers:	<ul style="list-style-type: none"> • ANA • Air New Zealand • Asiana • British Airways • Cathay Pacific • China Air • Dragon Air 	<ul style="list-style-type: none"> • Emirates • Etihad Airways • Eva Air • Gulf Air • Japan Airlines • Jet Airways • Kingfisher Air • KLM 	<ul style="list-style-type: none"> • Korean Air • Lufthansa • Malaysia Airlines • Qantas • Qatar Air • Singapore Airlines • Thai Airways • Virgin Atlantic
Low Cost Carriers:	<ul style="list-style-type: none"> • Air Asia • Air Deccan 	<ul style="list-style-type: none"> • Jetstar • Jetstar Asia 	<ul style="list-style-type: none"> • Spicejet • Tiger Airways • Virgin Blue
Frequent Flier Programs:	<ul style="list-style-type: none"> • AirChina • ANA • Air New Zealand • Asiana • British Airways • Cathay Pacific • China Air • Dragon Air 	<ul style="list-style-type: none"> • Emirates • Etihad Airways • Eva Air • Gulf Air • Japan Airlines • Jet Airways • Kingfisher Air • KLM 	<ul style="list-style-type: none"> • Korean Air • Lufthansa • Malaysia Airlines • Qantas • Qatar Air • Singapore Airlines • Thai Airways • Virgin Atlantic

⁶ An independent and trusted third-party company providing benchmarking data, competitive analysis and operational metrics on customer’s experience of Web sites, broadband services and mobile communications.

Section 4: Akamai's Solutions for Travel Companies

Akamai offers a range of solutions that enable on demand application and advanced content delivery, as well as tools and services that make distribution and management of hotel and travel applications and content easier and more cost-effective.

Akamai Dynamic Site Accelerator

This highly secure, on demand business solution addresses the performance needs of your site to help guarantee a positive customer experience, increase conversion rates, and ensure transaction completion while reducing infrastructure build-out costs. Akamai Dynamic Site Accelerator includes capabilities to improve speed and consistency, giving users immediate, quick interactions. The solution increases performance and reliability of reservation transactions and other critical information, and can apply the benefits of caching to pages containing dynamically personalized information. Because less information needs to be retransmitted from the origin site, performance is significantly improved.

Because the Akamai EdgePlatform is a distributed computing platform, application requests such as product searches, dealer locators and user prioritization are transferred to the edges of the Internet, decreasing the load on origin servers. Dynamic Site Accelerator can also buffer your back-end transaction processing applications during peak times without risking lost revenue. It identifies high-value customers and ensures they have priority access to these applications to complete transactions. You can queue requests based on variables including the dollar value of the transaction, total value of the customer, or origination of the request.

Travel companies can drive measurably higher advertising and conversion revenue from each online relationship via this solution. Finding your site consistently able to provide inventory availability and reservation information and processes, customers make it their preferred site for booking travel online.

Dynamic Site Accelerator also provides site failover features that can ensure that your site is always "on-air", even during planned and unplanned downtime.

When the origin site is unavailable, the Akamai EdgePlatform, as an extension of the enterprise's infrastructure, detects the problem and alerts the origin site administrators through a range of reporting tools. Rather than serve an error, Dynamic Site Accelerator ensures a positive user experience by failing over to backup content and applications. The backup content and applications that are delivered during origin site downtime are highly configurable so that the most critical functionality is always available for users. For your reservation system, 100% uptime means that dollars can keep coming in the door— the travel desk is always open, even when your origin site is unreachable. Given the unprecedented number of reservations now transacted online, even a 0.01% increase in conversion rates can lead to millions of dollars of incremental sales and deferred call center costs annually.

Akamai Web Application Accelerator

Akamai's fully-managed Web Application Accelerator is a service that enables travel enterprises to accelerate dynamic, highly-interactive Web applications securely, resulting in greater adoption through improved performance, higher availability, and an enhanced worldwide user experience. It ensures consistent application performance, regardless of where users are located, and delivers capacity on demand, where and when it's needed—without significant investments in additional infrastructure.

Akamai's global reach, coupled with optimized routing and connection technologies, enables travel businesses and organizations to deliver applications and content from the edge of the Internet, affording greatly accelerated performance. To ensure security, the Akamai EdgePlatform integrates seamlessly with your existing access control solutions. And Akamai Web Application Accelerator provides a range of features so you can monitor and control traffic, applications, and content—with minimal resources.

"The Internet generated an average of 26,000 incremental rooms occupied per night and annual incremental room revenue of \$715 million in 2003."

PRICEWATERHOUSECOOPERS 

Why Travel Companies Choose Akamai

- **Improve look-to-book ratios and conversion ratios online**
- **Decrease call center costs associated with reservations and loyal customers**
- **Handle peak travel season with no incremental Web site costs**
- **Ensure 100% uptime of online reservation systems**
- **Improve communications with remote offices, travel agencies, and employees**
- **Drive online service provision**

How Travel Companies Benefit

The overall benefit of Akamai's services is that they enable profitable e-business. This is achieved by making the Internet a predictable, scalable, and secure platform that organizations can use to extend and control their e-business infrastructure.

Predictability

Reliability and Performance Increases Look-to-Book Ratios and Conversion Rates

On The Akamai's EdgePlatform, hotel and travel companies can protect investments in Web site design and deployment, and in Web-based marketing programs by eliminating the downtime that can foster negative perceptions and lead to lost revenue. Akamai services increase the speed and reliability of all content delivery and processes—even on encrypted transactions and other non-cacheable, complex and dynamic content. Because fewer decisions and bytes need to be retransmitted from the origin site, performance is significantly increased. With Akamai solutions, you can provide your site visitors a consistent, high-quality interaction, regardless of Internet conditions or end-user locations.

Scalability

Deliver Consistently High Performance to Every User

Akamai has deployed edge servers around the world to serve content or on demand Internet applications. Travel companies can simply provision a global Web applications infrastructure from a single vendor and turn on needed capacity with the flip of a switch.

Scale Dynamically to Address Flash Crowds and Varying Traffic

Akamai's massively distributed network serves as a shock absorber for traffic—automatically providing capacity on demand to meet the requirements of flash crowds generated by marketing promotions, denial-of-service attacks, news events, and other Internet traffic anomalies. This capability allows hotel and travel companies to avoid the costly over-provisioning of equipment and resources necessary with centralized or mirrored models. In addition, the re-use of frequently requested content (through caching) lightens the load on core database application servers so they can scale to higher levels and run on less expensive hardware.

Use On Demand Applications that Grow Business

Akamai's EdgePlatform includes services that enable delivery of J2EE Web applications (including IBM WebSphere) that scale on demand and perform faster and more reliably worldwide. When delivering applications via the EdgePlatform, Akamai's technology ensures that application code is executed from the optimal location for each user on the Internet—taking into account Internet traffic conditions at the time of execution. Application requests such as availability searches, hotel locators, reservation transactions, and user prioritization are transferred to the edges of the Internet, decreasing the load on your origin servers.

Security

Akamai's EdgePlatform meets the most stringent requirements of physical, network, software and procedural security, ensuring that SSL objects and pages are securely delivered. And because secure content delivery features are built right into Akamai's solutions, hotel and travel companies can eliminate the need for costly hardware and dedicated staff to protect content and transactions. In addition, Akamai's EdgePlatform can mitigate denial-of-service attacks, or other malicious activity that can interrupt business, through the ability to completely mask a business' origin servers from any external, direct attack.

The Final Analysis: Profitability

The fundamental goal of every business is to drive profit. Your Web site has the potential to be your least expensive distribution channel. And if managed well, it can also build brand loyalty that increases lifetime customer value. But this potential can only be fulfilled by a predictable, scalable, and secure online presence.

Akamai's services protect against the unpredictability and failures of the Internet—the result is protection of the corporate brand, enhanced customer loyalty, and higher conversion rates that equal higher revenue.

About Akamai

Akamai® is the leading global service provider for accelerating content and business processes online. Thousands of organizations have formed trusted relationships with Akamai, improving their revenue and reducing costs by maximizing the performance of their online businesses. Leveraging the Akamai EdgePlatform, these organizations gain business advantage today, and have the foundation for the emerging Web solutions of tomorrow. Akamai is "*The Trusted Choice for Online Business.*" For more information, visit www.akamai.com.



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