Akamai Solutions for Cloud Computing

Accelerate, Scale and Fortify Applications and Platforms Running in the Cloud

- ADOPTING APPLICATIONS FROM SAAS PROVIDERS
- DEVELOPING NEW APPLICATIONS FOR THE CLOUD
- LEVERAGING COMPUTING AND STORAGE IN THE CLOUD

How do you make it all work?

Cloud computing promises more agile, efficient, and cost-effective infrastructure solutions for building, scaling and using applications and services.

Inherent to the Cloud, however, are the challenges of running applications over a highly unpredictable and unreliable platform — the Internet. Cloud-based offerings will need to overcome these challenges in order to meet enterprise computing requirements such as speed, scalability, availability, and security. These requirements must be met before companies can justify migrating their business-critical applications to the Cloud.

Furthermore, while enterprises have begun to embrace cloud computing, they are approaching it in a modular way, in order to facilitate experimentation, reduce risk, and meet specific business requirements. For example, a company may simultaneously:

- Run highly-sensitive legacy functions at an in-house data center
- Use on-demand storage services for their growing library of rich media assets
- Leverage established SaaS modules to enrich application functionality
- Develop new application features and extensions on top of dedicated cloud platforms

Akamai pioneered ways to turn the Internet into a stable business platform for applications and sites running in dedicated hosting and internal datacenters. As SaaS applications and applications deployed on external cloud platforms like Amazon EC2 are embraced by Enterprises, Akamai's optimization services for ***Cloud Acceleration, Cloud Business Continuity, Cloud Security*** and ***Cloud Applications and Storage*** have become critical to the success of these cloud computing strategies.

Inside Akamai's Services for Cloud Optimization

For over a decade, Akamai has helped companies leverage the power of the Internet by transforming it into a secure and reliable place for transacting business. Now, the same underlying technologies and solutions are needed to bolster cloud infrastructures with the scale, reliability, security and performance they need in order to drive successful enterprise adoption of cloud computing.

The alternative to centralized Cloud infrastructure, Akamai's services for cloud optimization are built on top of an intelligent network of more than 48,000 servers, distributed across 1000 networks worldwide. This distributed network runs at the edge of the Cloud and transforms the Internet into a high-performance platform where companies can confidently develop and deploy business-critical applications within a cloud computing environment.

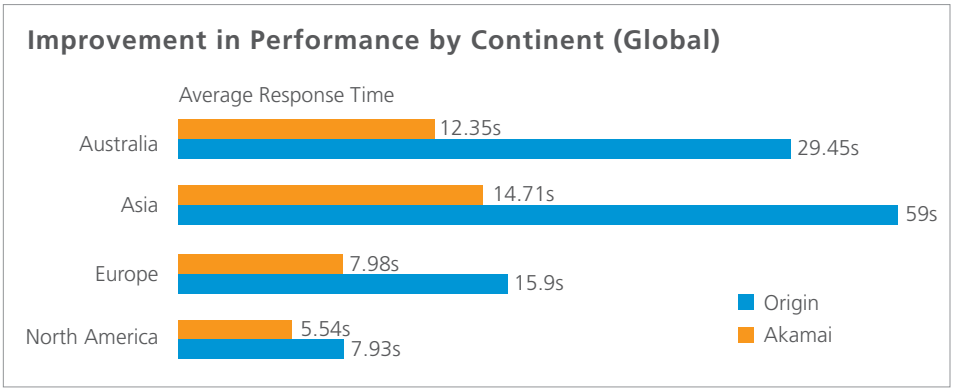
Cloud Acceleration

As with any on-premises or hosted application running over the Internet, cloud-based applications are typically also hosted in a limited number of centralized datacenters, yet need to serve widely-dispersed users. The most common deployment scenarios are SaaS applications running in datacenters dedicated to a single application or suite of applications, or alternatively a customized application deployed on commodity Infrastructure-as-a-Service using virtual machine instances, storage, and computation as pay-as-you-go utility computing.

In both scenarios, applications can suffer from the inefficiency of the Internet and the limitations of geographic scale and reach. Both can dramatically slow cloud applications responsiveness to the point of negatively impacting application adoption.

Akamai's Web Application Accelerator and Dynamic Site Accelerator solutions leverage unique communications, routing, and application-layer optimizations to deliver global reach, responsiveness, and scalability for SaaS and other Cloud-based applications.

Global SaaS Application running on Amazon EC2 Infrastructure accelerated by Akamai's Web Application Accelerator



Application response times were at least twice as fast in Asia, Europe, and Australia with Akamai, compared to the origin third-party Cloud-based infrastructure

Up to 400% performance improvement for accelerated SaaS application transactions running in dedicated SaaS data centers and 3rd party cloud platforms

Web Application Accelerator

For SaaS vendors and business applications running in a single or few dispersed cloud data centers, Web Application Accelerator includes capabilities oriented for business or extranet applications running in the cloud, such as advanced access control rules integrated within complex firewall access policies, and the ability for SaaS application vendors to provision and manage on an application-by-application and user-by-user basis.

Dynamic Site Accelerator

For consumer-facing Web sites and applications running on third-party cloud infrastructure, Dynamic Site Accelerator includes dedicated consumer-facing commerce and media capabilities for video delivery, secure commerce transactions and flash crowd management that are required to successfully run application and components on third party cloud platforms. It also includes easy-to-manage business metrics for page view-oriented business models.

Customer Case Study

Bullhorn, a SaaS provider of front-office staffing and recruiting software, serves more than 1,000 firms, including some of the world's largest staffing firms.

Akamai's Web Application Accelerator accelerates the Bullhorn staffing application over the public cloud to provide LAN-like responsiveness for end users across the globe. Bullhorn credits Akamai with contributing to the astounding 1000% growth in quarter-over-quarter business it has seen from its international customer base.

Cloud Business Continuity

Real time, in-the-cloud solutions for fortifying the public Internet for SaaS applications and cloud-based application components

Akamai's Business Continuity services help SaaS vendors fulfill an overall business continuity and disaster recovery plan by addressing availability vulnerabilities in the Internet itself. Earthquakes, cable cuts, blackouts, peering issues or congestion — Akamai dynamically avoids these problem points to make such issues transparent to your failover and global load balancing initiatives.

For enterprises leveraging 3rd party cloud platforms to augment origin capacity and provide overflow compute power, the ability to ensure business continuity for microsites and applications in a simple way becomes extremely important. Traffic and access to these cloud applications must be monitored and regulated in the same way a primary site needs to be.

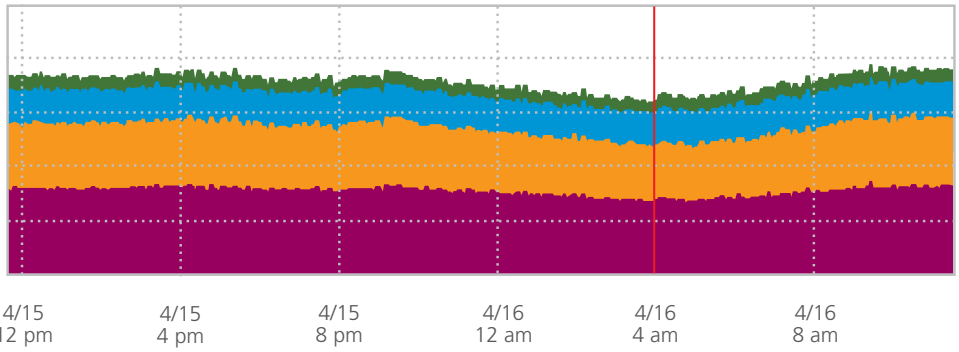
Akamai Global Traffic Manager

Akamai's Global Traffic Manager is a Cloud-based service that applies an Internet-centric, DNS level approach to global server load balancing to ensure high availability and responsiveness to user requests.

Enterprises and cloud providers with multiple origin data centers can leverage Akamai's global load balancing service to ensure high availability and performance for end users. Relied on by over 6500 online properties, Akamai Global Traffic Manager (GTM) combines real-time Internet and origin data center performance monitoring with customer-specific policy rules to direct each end user request to the optimal origin datacenter.

Customer Case Study

One of the world's most heavily trafficked sites needed a way to balance load across 14 geographically separated datacenters and maintain global growth without exponentially growing investments in traffic management infrastructure. Hardware-based load balancers were not responsive enough to Internet conditions and traffic variability, since they are based only upon data center performance.



DNS requests per second as shown for four select properties

Akamai's Global Traffic Management balances load based upon the best performance for the end user and assesses data center availability from several locations outside the data center. By using Akamai's network of globally distributed servers, the customer was able to provide localized name server responses while minimizing Internet congestion impact on users' ability to access the best performing data center, resulting in one of the fastest portal destinations on the Internet.

Akamai Site Failover

In addition to DNS-level load balancing services in Akamai offers a number of Cloud-based HTTP-level business continuity options in case of origin site failure. These include automatic redirection to a designated mirror or backup site, content replication to Akamai's high-availability NetStorage solution, or delivery of failover content from edge servers.

Cloud Security

Because of their reliance on Web infrastructure, SaaS and other applications running on cloud platforms are as vulnerable to Internet threats and service attacks as traditional Web sites and applications.

Meanwhile, the rapid development that is occurring on cloud platforms create cost savings and time to market benefits, but can also create new vulnerabilities.

The Akamai network can eliminate public entry points to cloud infrastructure by taking the initial hit at the Akamai edge, instead of at the SaaS, PaaS or IaaS data center. The Akamai network locks down a security perimeter and keeps malicious attacks such as DDoS, hacker attacks, Internet worms, content tampering, and application vulnerabilities outside of any public cloud environment. Akamai applies technologies such as DNS security, IP layer protection and access control, HTTP origin cloaking, and application request checking.

Additionally, for SaaS and other cloud applications that require secure connections, Akamai's SSL network will offload the need to build out dedicated SSL infrastructure.

Customer Case Study

Recently, a major US government Web site came under a sustained 12-hour Distributed Denial of Service (DDoS) attack. The attack originated from computers in 7 different Chinese provinces using 11 different IP addresses. Akamai's network successfully defended against the attack, resulting in no detrimental impact to end-user performance or functionality.

For this site, a typical 12-hour period generates approximately 250,000 origin requests, however, during this attack there were approximately 1.8 million requests. This more sophisticated DDoS attack targeted a dynamic portion of the customer site by making various search request calls, initiating connections, and making full GET requests before issuing aborts. Due to the design of the Akamai Edge network and the customer's use of the Dynamic Site Accelerator's (DSA) "SiteShield" module, the vast majority of requests were absorbed by Akamai Edge servers in Asia, and never reached the origin servers in the United States.

Protecting Cloud-based infrastructures and services against DDoS attacks and other Internet threats

Cloud Applications and Data Storage

As an early visionary and pioneer in distributed cloud computing, Akamai introduced NetStorage and EdgeComputing — its on-demand storage and application deployment solutions — nearly a decade ago. These services are part of Akamai's comprehensive suite of solutions, which also include high-performance delivery of static content, digital downloads, streaming video, and dynamic applications. All of Akamai's services work together and rely on the same underlying principle of delivering and executing Web applications from the edge of the Internet, in order to provide the best possible end user experience across all components of a Web site.

Akamai NetStorage

SUPPORTING THE WORLD'S MOST POPULAR SITES AND APPLICATIONS WITH FOUR PETABYTES OF CAPACITY IN 50 FULLY-REDUNDANT STORAGE REGIONS ACROSS THE GLOBE

Unlike simple cloud storage services, NetStorage provides secure, high-availability storage on demand. Combining geographically-distributed content replication with intelligent global traffic management and failover, NetStorage is ideal for large volumes of performance-sensitive content. It is a fully-managed, pay-per-use solution that delivers superior perfor-mance, reliability and scalability, while completely eliminating the need for in-house storage infrastructure.

COMMON WEB APPLICATIONS AND APPLICATION COMPONENTS RUNNING ON AKAMAI EDGECOMPUTING

- *Calculate*
- *Configure*
- *Convert Currency*
- *Demonstrate Product*
- *Form Registration*
- *Locate Dealer*
- *Manage Shopping Cart*
- *Map Generation*
- *Online Applications*
- *Online Contests*
- *Online Training*
- *Plan Trip*
- *Play Game*
- *Procure Vendor*
- *Quote Stock*
- *Request Brochure*
- *Schedule Service*
- *Site Search*
- *Search Engine Optimization*
- *Survey*
- *User Prioritization*
- *Validate Credit Card*
- *Vote*

Cloud Applications and Data Storage (cont.)

Akamai EdgeComputing

DISTRIBUTED EXECUTION OF JAVA APPLICATIONS FOR UNRIVALED GLOBAL PERFORMANCE AND ON-DEMAND SCALABILITY

EdgeComputing enables companies to deploy and execute J2EE applications or application components onto the Akamai network — the world's largest on-demand distributed computing platform. Applications that are based on infrequently-changing data, or those that can be batch-processed on the backend can be run with little or no need for origin infrastructure. In addition to providing an unparalleled end user experience, this efficient, on-demand architecture gives enterprises the flexibility to innovate and experiment with minimal risk, while leveraging an infrastructure that can instantaneously scale to handle any level of demand.

Customer Case Study

With Akamai EdgeComputing, Sony Ericsson avoided the costly build out of several regional data centers, while successfully supporting its worldwide mobile phone customer base. Sony Ericsson deployed some application components — including a phone configurator, shopping cart, and dealer locator application — to EdgeComputing, while other application components ran in a centralized datacenter.

This hybrid cloud strategy reduced dealer locator application response time by over a factor of four and increased online application availability from 92% to 100%. Sony Ericsson offloaded nearly 100% of Java application server processing to the Akamai network, reducing its cost per user session by 33%.

Akamai Services for Cloud Optimization for Any Cloud Strategy

Akamai's Services for cloud optimization support the full range of ISVs and enterprises, who are pursuing either hybrid or full-cloud strategies and want to take full advantage of cloud computing's many benefits. From SaaS providers looking for application performance improvements to enterprises desiring security and reliability as they migrate functionality to cloud platforms, Akamai provides the Optimization Services for Acceleration, Business Continuity, Security, Application and Storage so that computing in the cloud can succeed.

The Akamai Difference

Akamai® provides market-leading managed services for powering rich media, dynamic transactions, and enterprise applications online. Having pioneered the content delivery market one decade ago, Akamai's services have been adopted by the world's most recognized brands across diverse industries. The alternative to centralized Web infrastructure, Akamai's global network of tens of thousands of distributed servers provides the scale, reliability, insight and performance for businesses to succeed online. Akamai has transformed the Internet into a more viable place to inform, entertain, interact, and collaborate. To experience The Akamai Difference, visit www.akamai.com.

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