

AKAMAI WHITE PAPER

A person wearing a white lab coat is holding a tablet computer. The background is a blurred laboratory or office environment with various pieces of equipment and a yellow light fixture. The right side of the image is partially obscured by a dark grey geometric overlay.

## The Challenges of Connecting Globally in the Pharmaceutical Industry

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## Executive Summary

The pharmaceutical industry is globalizing. Conducting global clinical trials to get a broader and more diverse participant base and expanding into less-saturated developing markets are two significant drivers to globalization. However, this expansion creates the unique and very real logistical challenge of connecting a global network of employees, researchers, clinicians, customers, suppliers, distributors, and manufacturing sites to foster collaboration both inside and outside the organization. Globalization necessarily means a heavier reliance on transmitting data via the Internet to all these constituents, and that means new risks arising from poor web performance, inadequate end-user experience, and often, the resulting regulatory slow-downs.

## Global Connections

To address this global collaboration challenge, many pharmaceutical companies have begun moving key business applications to a web-application delivery model.

This model allows companies to leverage the Internet to connect global users. Examples of the types of applications companies are shifting to a web-based delivery model include:

- Clinical trials applications
- Collaboration tools
- Customer relationship management (CRM) applications
- Enterprise resource planning (ERP)
- Pharma covigilance and clinical safety software

Using web-based applications for business operations helps ensure application accessibility for remote users. However, the key to realizing the benefits of application delivery via the web hinges on the performance and reliability of the network, i.e., the public Internet. The Internet is not a business-ready platform; it was not designed to handle the demands and requirements of today's business use.

### **While the Internet offers a cost-effective global network, application delivery over the Internet is complicated by:**

- **The number of users.** The total number of Internet users worldwide is estimated to have increased by 833%, to 3,366,260,056 users, between 2000 and 2015.<sup>1</sup>
- **The increase in the growth and mobility of enterprise applications.** International Data Corporation (IDC) has estimated that the number of enterprise applications optimized for mobility will quadruple between 2014 and 2016.<sup>2</sup>
- **The multitude of devices accessing the Internet.** Mobile devices, such as smartphones and tablets, have become an increasingly important means of Internet access.
- **The variety of browsers used to access the Internet.** Relevant browsers include Internet Explorer, Firefox, Chrome, Safari, Opera Mini, and the Android Browser.<sup>3</sup>
- **The fragmentation of network connections.** Users might connect to the Internet using home Wi-Fi, a corporate wired LAN, 3G or 4G networks, or through a tethered connection. Data transmission over the Internet can be slow.

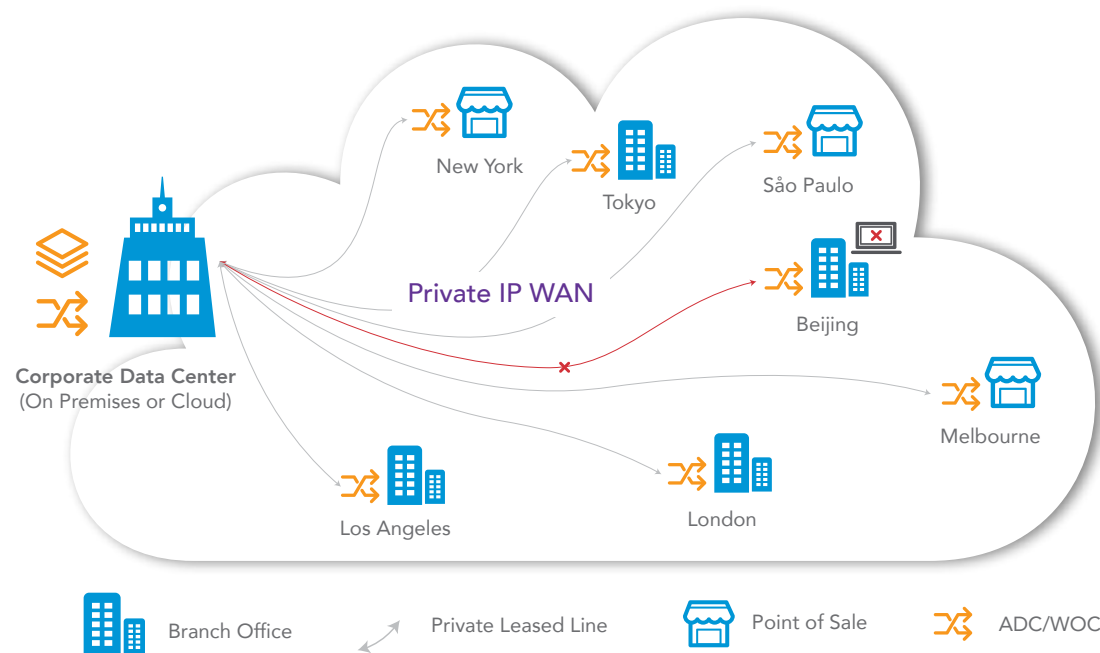
Due to legacy architecture and the logic of the Internet, the selection of routes between data centers and end users is extremely inefficient. Once a route is selected, the transmission of data is slow, error-prone, and subject to congestion and downtime.

As a result, the pharmaceutical company's global users may experience poor application response times, inconsistent availability, and data-loss vulnerabilities. These Internet performance issues are particularly important in the pharmaceutical industry due to the critical importance of ensuring fast and efficient clinical trials.

## Why Standard Approaches Fall Short

Companies have tried a number of different approaches to connect global users and foster collaboration by addressing Internet performance, reliability, and security issues. One approach is to implement physical hardware and/or a virtual appliance that lives within the walls of the company data center, such as an application delivery controller (ADC) or a WAN optimization controller (WOC).

- ◆ ADC/WOC appliances are one approach for optimizing application delivery over private WAN
- ◆ Optimizations require symmetrical appliance deployment



The problem with this approach is that it does not function as a symmetrical architecture when supporting Internet users. Organizations need symmetrical solutions that optimize both ends of application delivery – the end where the application is hosted and the other end where the end user is located. Companies can't possibly implement a box or virtual appliance in every data center and in every location where their end users are located.

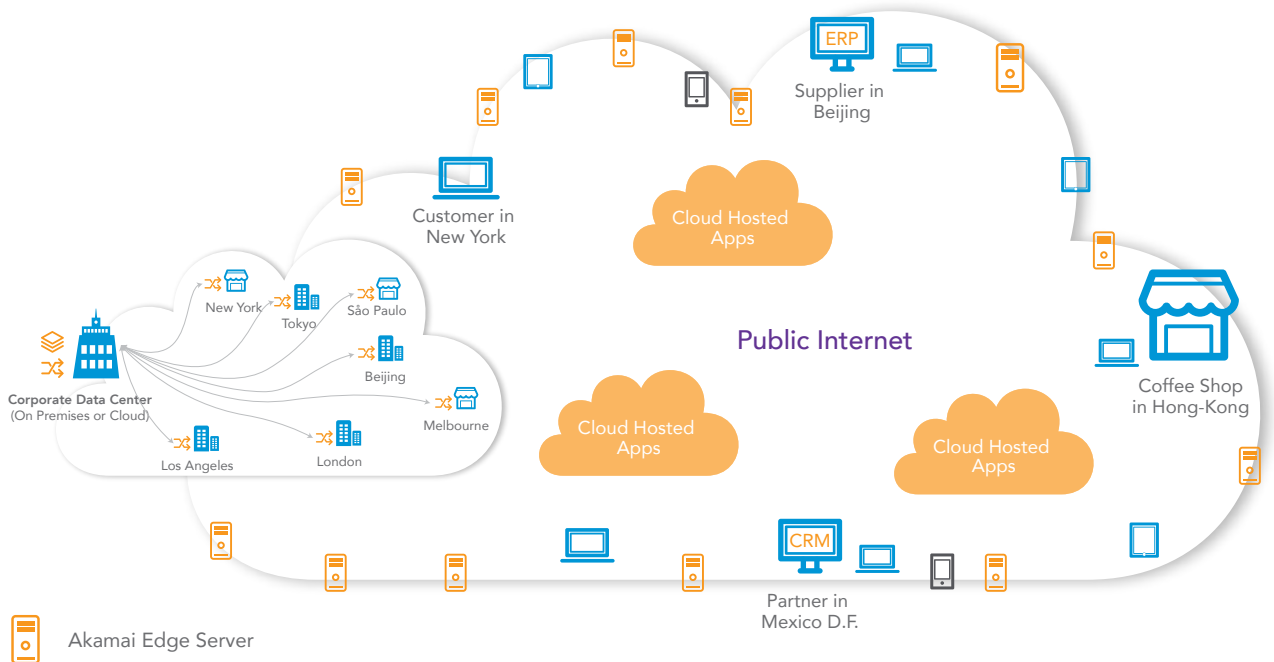
A second approach is to invest in private network infrastructure. This approach addresses Internet performance and reliability issues, but it does not scale. Access to applications is limited to end users on the private network. Moreover, it prevents companies from leveraging the cost efficiencies and global scale of the Internet to connect global users.

A third approach is to move websites and applications from a corporate data center to the public cloud. But this solves only half of the application delivery challenge: By moving applications to a public cloud infrastructure, a company realizes increased scalability and cost efficiencies in managing data center infrastructure, such as servers and storage equipment, but they still need to rely on the public Internet to reach their global users — which is the other half of the application-delivery challenge that public cloud providers have historically not been able to effectively solve.

## A Comprehensive Global Collaboration Solution

A more comprehensive approach to improving Internet performance, reliability, and security in order to connect global users and foster collaboration is to use a cloud-based application delivery platform. Cloud-based application delivery platforms employ hundreds of thousands of servers distributed across the globe with a unifying architecture designed to ensure network speed, reliability, and security. They are deployed symmetrically, meaning they optimize website and application delivery at both the origin (private data center or public cloud) and the front end (user interface).

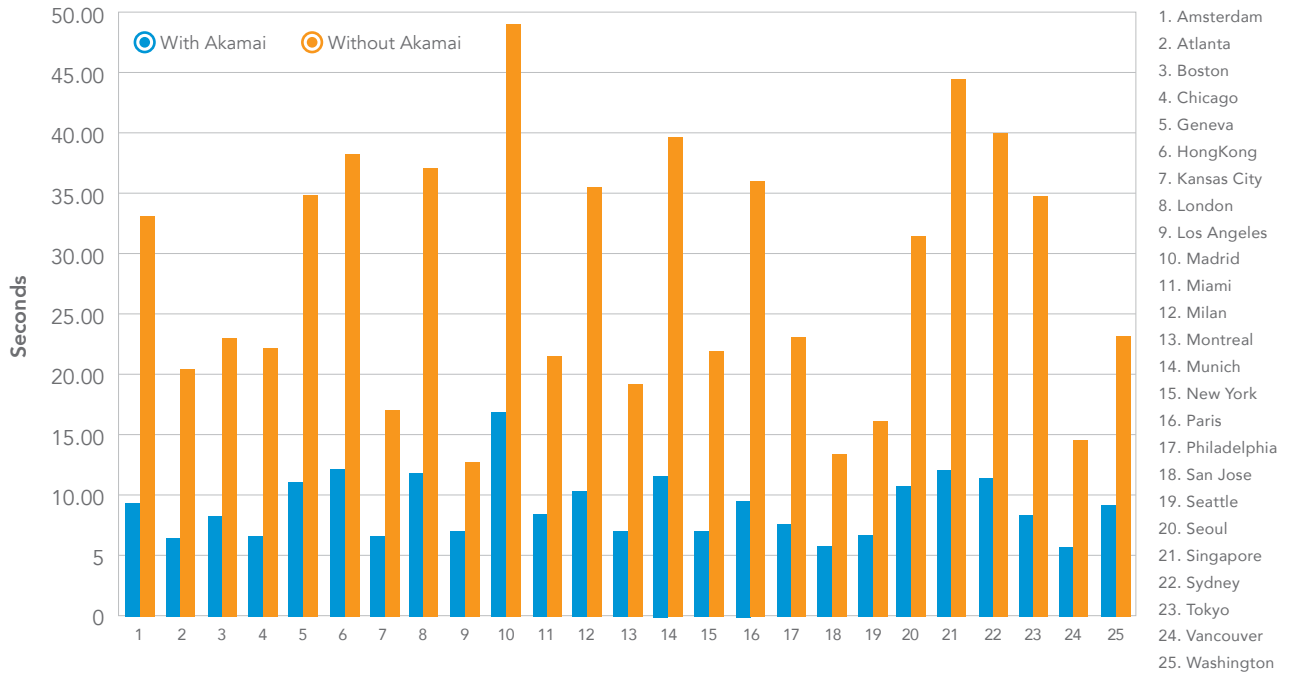
For application delivery over the Internet, a global, symmetrical, cloud-based architecture is the comprehensive approach



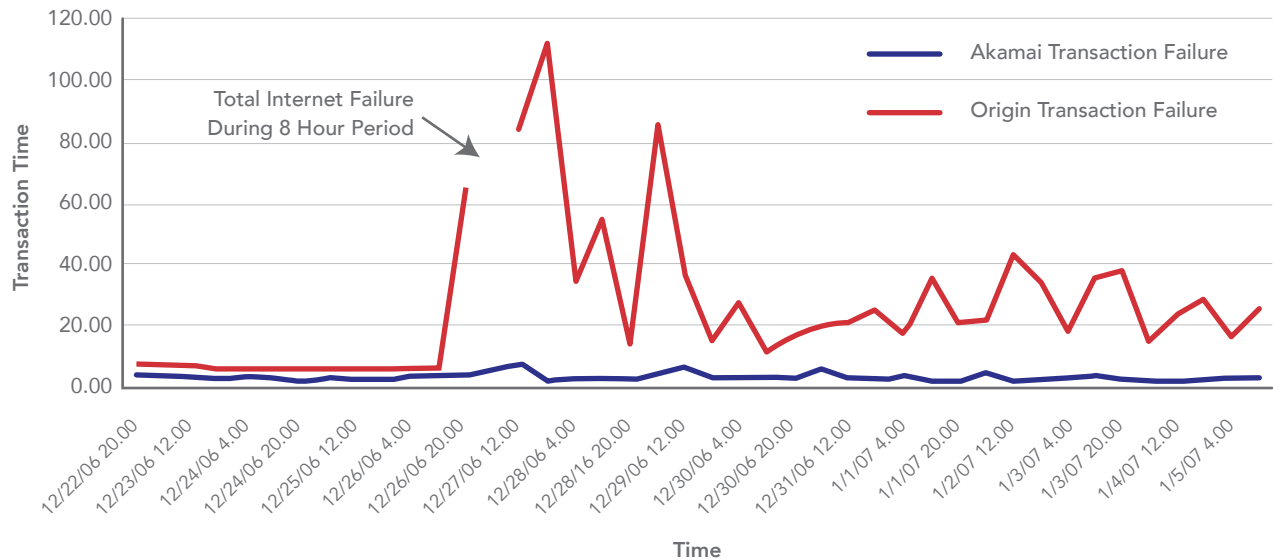
A cloud-based application delivery platform optimizes application delivery using multiple strategies, including:

- **Determining an optimal Internet route** using intelligent route selection, instead of using the default Internet routing protocols
- **Facilitating connection offload.** Inbound data requests can be served by the platform using caching, reducing the impact on data center bandwidth and infrastructure
- **Enabling load balancing.** Configurable load-balancing capabilities decrease latency and increase performance
- **Providing real-time failover,** which supports instant and seamless failover of traffic between data centers if there is an outage in a primary data center or cloud environment
- **Accelerating web performance.** Web pages load as quickly as possible, on any device, anywhere in the world
- **Optimizing for mobile and cellular users.** An intelligent platform is able to dynamically optimize the user's experience based upon the user's device, browser, and network connection

**Cloud-Based Application Delivery Platform Enables:**  
Increased Adoption & Improved User Experience



**A Cloud-Based Application Delivery Platform Enables Increased Availability:**  
Web Transaction Data



Cloud-based application delivery platforms offer network security benefits as well. Cloud-based web application firewalls (WAFs), deployed within the platform, offer the advantage of intercepting malicious cyber activity at the edge of the Internet, before attack traffic reaches the company's own network or applications. Likewise, cloud-based security solutions are designed to easily scale to defend against large DDoS attacks, providing another layer of network defense at the edge of the network, away from the company's data center.

## Making the Internet Work for Global Pharmaceutical Companies

Cloud-based application delivery platforms are designed to enable pharmaceutical companies to leverage the global reach and cost-effectiveness of the Internet without sacrificing network speed, reliability, or security. In addition to being effective, this solution is easy to deploy.

Companies can take advantage of cloud-based application delivery platforms by making a simple domain name system (DNS) change, versus needing to procure, provision, and configure on-premise or virtual appliances in order to optimize application delivery.

Pharmaceutical companies invest considerable resources in buying or building web-based applications. Whether it's clinical trials applications, CRM, collaboration, or ERP, they choose these applications to support specific, critical business functions. It's important to pay attention to the performance of the network delivering those applications and to leverage resources like cloud-based application delivery platforms in order to achieve your company's goals in making that initial application or website investment.

### Sources

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