AGILE DEPLOYMENT WITH THE WORLD’S LARGEST & MOST TRUSTED CLOUD DELIVERY PLATFORM
EVOLUTION OF APPLICATION DEVELOPMENT — THE SEMINAL SHIFT

Organizations will go from four application releases per year in 2010 to 120 releases per year by 2020.
- Forrester

Consumers have gained the upper hand in the business/consumer relationship due to the exponential increase in choice, channels, and access to information. As a result, organizations of all sizes need to make customer experience their highest priority. To maintain the competitive advantage and bring in new customers, organizations are increasingly adapting to DevOps as a means to deliver significantly more application releases per year than in the past.

“Infrastucture & Operations (I&O) teams must pursue the rapid delivery of applications to provide differentiated customer experiences that meet accelerating business expectations. Faster delivery alone merely leads to customer disappointment when the software delivery process is substandard, deferring to velocity without quality. Automating the movement and deployment of infrastructure, middleware, and applications through testing is a key pain point for I&O teams today.”


The Akamai cloud delivery platform is designed to seamlessly integrate into your organization’s existing Continuous Integration & Continuous Deployment (CI/CD) workflow and DevOps tools, enabling automated testing and deployment for faster, more frequent, and robust application deployment.

DELIVERING A SUPERIOR CUSTOMER EXPERIENCE — WITH A CLOUD DELIVERY PLATFORM AND HIGH-PERFORMANT APIs

In the past decade, we have seen unprecedented growth in Application Programming Interfaces (APIs), driven by the global expansion of the digital economy. According to Forbes, “2017 Is Quickly Becoming The Year Of The API Economy.” APIs enable developers to create new differentiated apps by easily calling onto various web services that add even more functionality to their existing app.

As organizations utilize APIs to expose their enterprise assets and data to their customers, partners, and external developers, they are increasingly challenged with providing easy-to-use, robust APIs that are secure, reliable, and scalable.

Akamai delivers more than 8 trillion API and web services transactions on its platform per month. Akamai leverages a unique set of API-specific capabilities designed to provide performance, scale, offload, and reliability to web apps. Akamai’s unique performance solutions include optimizations for:

- **API Acceleration** - Real-time data collected by Akamai selects an optimal path between your origin infrastructure and the Akamai Edge servers, while proprietary techniques are used to avoid Internet congestion points and unnecessarily long routes.

- **API Caching** - Akamai can cache these responses at the Edge (even for mere seconds) to position the content closer to the consumer requesting it, keeping requests off of the cellular network and helping to preserve the battery life of mobile devices.
• **API Compression** - Compression of API responses can reduce the payload size 60–90% and thus the delivery time of API responses.

• **API Protection** - Akamai can apply rate controls to API requests, as well as inspect JSON and XML API calls, to ensure your web server remains available and the data on it is secure.

• **API Gateway** - Designed for use at the Edge, the Akamai API Gateway helps you easily manage, monitor, and scale APIs that are crucial for enabling new customer-focused business models. It provides you with distributed access, policy, and traffic controls while managing runtime activities such as routing, traffic management, and authentication. API management at the Edge requires fewer round trips to origin, resulting in improved performance and stability.

• **API Prioritization** - Akamai’s unique Edge-based intelligence can throttle the volume of requests that are sent to API-driven applications to maintain availability of key applications, even offering alternate static experiences to handle overflow traffic to ensure visitors have a quality experience, even when the application is under extreme load.

Specifically for developers, Akamai offers APIs for most interactions with its cloud delivery platform, giving you the freedom to work programmatically via the command line. Some examples include:

• The Property Manager API allows you to modify your property configurations and activate them on Akamai staging or production networks.

• The Certificate Provisioning System API lets you request new SSL/TLS certificates, modify existing certificates, automatically renew certificates, and delete certificates.

• The Global Traffic Manager API enables you to manage traffic to your data centers by dynamically choosing the best client nameservers in response to GTM domain queries.

• The Diagnostics Tools API allows you to diagnose and troubleshoot any problems you may encounter while delivering content to your end users on Akamai.

• The Fast Purge API gives you the ability to purge content at the Akamai Edge in seconds using the Fast Purge utility.

You can browse through Akamai’s extensive API catalog here.

In addition to robust, easy-to-use, and well-documented APIs, you also need a cloud delivery platform that is:

• **Always available** - Akamai’s proprietary routing technology constantly monitors Internet traffic patterns and avoids any minor or major Internet disruption; this is the basis of Akamai’s 100% SLA.

• **Scriptable** - You can work with Akamai APIs from the command line to script, automate, and integrate content delivery tasks into your existing CI/CD pipeline. For example, you can use the command line interface tool within your automation scripts to simplify the process of creating a property.

• **Fast** - With fast purge and fast activation, you can deploy your changes globally in minutes,

• **Scalable** - Akamai has by far the largest and most distributed cloud delivery platform in the industry, with more than 200,000 servers in 130 countries. Akamai servers are dispersed geographically and offer coverage in every region of the world.
• **Secure** - Akamai collects and analyzes terabytes of attack data, billions of bot requests, and hundreds of millions of IP addresses to solidify your defenses and keep you informed. Akamai can identify and thwart attacks and threats almost as soon as they start and even prevent them from reaching your origin servers. Also, with Akamai, developers can use positive and negative security models to protect APIs from malicious calls.

• **Flexible** - With customizable Edge Logic, Akamai offers users with the choice of deploying apps once and choosing where the app should be assembled: on the Content Management System (CMS), the Application Server (AS), or the Content Delivery Platform. Edge Logic can also be used to coalesce multiple API calls at the Edge and API calls that are associated with different functions of an app into a single API call, resulting in lower API traffic and improved performance.

**THE FUNDAMENTALS OF CONTINUOUS INTEGRATION & CONTINUOUS DEPLOYMENT (CI/CD)**

CI requires developers to integrate code into a shared repository several times a day. Each check-in is then verified by an automated build, allowing developer teams to detect problems early in the application development cycle.

The objective of CD is to build robust applications that are always production ready and can be deployed at any time. Development teams implement CD by automating the application delivery workflow from development to production. Some of the fundamentals of CD include:

• Standardizing infrastructure configurations
• Managing configuration details by following the same discipline applied to managing source code
• Automating the delivery of the software completed by the development team to specific environments
• Configuring the infrastructure so that automated tests can detect problems
• Pushing changes (executables and configurations) into increasingly production-like environments to confirm that the application will work flawlessly in production
• Ensuring that every change that passes automated testing is automatically deployed into production
Continuous monitoring entails constantly evaluating the application in real time after it is deployed into production. Key application health indicators such as customer experience (CX), how it affects your business metrics, performance, security threats, and quality are monitored. The goal of real-time feedback on application health is to be able to react instantly to any disturbances and optimize the application quickly to ensure a seamless CX.

Continuous operations applies to effective change management after the application is deployed in production in a way that is nondisruptive to end users. Processes such as making changes, updating the application, refreshing content, and replacing code that may have bugs fall under this function. Even though the application can be taken offline during planned maintenance, continuous operations enables end users to be serviced by the previous version of the application until the new version has been successfully tested and deployed.

It is important to choose a CDN that integrates seamlessly into your existing CI/CD automation workflow and DevOps tools, has the ability to monitor your application health in production in real time, and provides you with the tools you need to optimize your application. Ultimately, adding a proven CDN to your DevOps tool set delivers high-performant applications and a CX that helps you stay ahead of your competition.

**CI/CD with a Cloud Delivery Platform – How Akamai Simplifies Your DevOps Journey**

In an ultra-competitive world with abundant access to resources, pushing out one change every six months isn’t enough to keep up with the market. Companies today have streamlined deployment processes and capabilities in order to speed up deployments from once a year to as often as possible. DevOps represents the category of innovations that speed up time to market and increase developer productivity by reducing friction in the deployment pipeline.

Technological advancements such as containerization, multitenancy, IaaS, the computing flexibility offered by cloud providers, and software-defined everything have driven developers toward a whole new resource consumption model – and enabled them to push, monitor, and react to multiple code releases every day. This dramatically speeds up developer productivity (and happiness as a result), and makes for more efficient and profitable engineering organizations.

Cloud delivery platforms must also meet developers where they are by integrating seamlessly into DevOps pipelines. Akamai for DevOps represents our investment in bringing our cloud delivery capabilities where developers live every day.

Cloud delivery platforms have historically had three primary responsibilities:

- **Performance** - ensuring websites and mobile apps deliver experiences that fulfill user expectations.
- **Reliability** - making sure customer experiences are delivered reliably at scale so customers never notice a blip in service.
- **Security** - absolute confidence that customer data is protected and secure.

These are still must haves, and Akamai remains committed to leading innovation in each of these segments. However, cloud delivery platforms today have a fourth responsibility – increasing developer productivity, and in particular enabling the pace of change that has been set by the DevOps movement.
So what must cloud delivery platforms do to keep up with developer expectations? A key driver of change here is that the primary cloud delivery platform user is now a full-stack developer – someone who juggles cloud delivery platform-related tasks along with a plethora of other competing activities. Cloud delivery platforms need to facilitate the success of this user by enabling them to move at their speed, at their scale, and in their environments, while still safeguarding all of the must-haves around performance, reliability, and security.

Developers won’t accept trade-offs, but insist on technology that allows them to work the way that suits their environment best, specifically:

- Performing any task via an intuitive UI, via flexible APIs, or via simplified SDKs that can be integrated into existing developer environments.
- Treating their cloud delivery platforms as any other piece of code – versioning it via Git, weaving it into background Jenkins jobs to enable continuous integration and deployment flows, and integrating it into their infrastructure just like any other component within it.
- Access to real-time insights to enable an immediate feedback loop. These should be accessible as a raw feed that offers the flexibility to massage data in the formats conducive to specific use cases or via aggregated trends that make this data more consumable. It is important that these insights provide visibility into all aspects of the cloud delivery platform ecosystem – internal cloud delivery platform behavior, security, and end-user impact.
- Deploying changes at speed, but having the ability to revert back instantly if something goes wrong.
- Enabling everyday productivity and efficiency that comes out of a DevOps-savvy culture.

Akamai demonstrates our commitment to DevOps users by enabling the following capabilities, implemented with the three pillars of Akamai for DevOps:

1. AUTOMATE
2. MONITOR
3. OPERATE
1. Automate

Automation is at the core of the DevOps methodology. To achieve complete automation within your CI/CD workflows, it is crucial for the chosen cloud delivery platform to be programmable with code, and to have well-documented, easy-to-use APIs.

Akamai allows you to easily automate your CI/CD workflows with scripts, making deployment processes repeatable. Development teams can download the Akamai configuration as code with an API, edit it, store it in the Git repository, and version control it. Each time there is a code commit, Jenkins moves the code through the entire application lifecycle and creates a test property.

Multiple development teams can commit code in parallel and test their code in an Akamai pre-production environment that simulates production behavior, ensuring that the code is tested earlier in the application lifecycle and ready for production. As with all of the DevOps processes, the testing process is completely automated. As configuration updates are submitted by development teams, they are merged into the build, tested, and deployed to production.

Akamai enables you to continuously load test much earlier in your lifecycle, helping to ensure that your application is production ready from the get-go. With scalable pre-production load testing, you can rest assured that your application will scale in production. You also get real-time analytics with easy-to-consume dashboards so you can perform root-cause analysis while the test is running.

Akamai integrates with most major tools in the DevOps ecosystem, giving you the freedom to continue working with the tools you know and love. Out-of-the-box integration with Varnish saves duplication of efforts by syncing rule changes made at the origin Varnish cache server to the Akamai Edge Server automatically in real time. Even cache purges are synced automatically with the Varnish connector. The WordPress connector enables you to automate your publishing cycle by instantly purging and replacing the cache with new content every time your team creates a new post. Similarly, the Akamai cache and configuration can be automatically deployed alongside the rest of your infrastructure with the Terraform connector.

Akamai lets you iterate quickly in a production environment by making, testing, and deploying code changes multiple times a day.
2. Monitor
Real-time insights are critical to sustain and optimize operations. Akamai offers a comprehensive view into your web and mobile users with real-time performance data from all user events. In addition to performance metrics, you can also identify the immediate impact of user-perceived performance on transaction volume, revenue, conversions, and other key business metrics. With this actionable user insight, you can remediate any application performance issues immediately.

With Akamai, you can perform load testing at scale via the cloud or in a pre-production environment. Testing capabilities include web and mobile apps, APIs, databases, and web services, which all fit into your continuous integration workflow. During testing, you always have access to real-time analytics and customizable dashboards allowing for root-cause analysis while tests run.

3. Operate
Agile response to operational events is fundamental to the DevOps strategy. Akamai provides real-time insights with summarized stats for response rates, traffic volumes, and more, enabling you to make fast, data-driven decisions. You are able to react to operational challenges or inefficiencies and respond in real time, when it matters most.

Fast and flexible purging allows for quick content updates – you can purge content at the Edge in seconds. Fast Fallback ensures that you always have the ability to go back to the last stable configuration in seconds after a new change is deployed. Edge Logic provides additional flexibility at the Edge so you can manage your everyday operations such as image management, URL redirects and offloads, visitor prioritization, API prioritization, and more.

Challenges Addressed

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release velocity</td>
<td>Early testing and validation to enable faster release iterations</td>
</tr>
<tr>
<td>Quick reaction times</td>
<td>Real-time monitoring and insights to minimize reaction times</td>
</tr>
<tr>
<td>Akamai as a component of your existing DevOps ecosystem</td>
<td>Providing a programmable, automatable, repeatable interface so all Akamai interactions can be integrated into your existing CI/CD workflows</td>
</tr>
<tr>
<td>Operational efficiency</td>
<td>More efficiency built into Akamai capabilities to save on time, cost, and resources</td>
</tr>
</tbody>
</table>
As the world’s largest and most trusted cloud delivery platform, Akamai makes it easier for its customers to provide the best and most secure digital experiences on any device, anytime, anywhere. Akamai’s massively distributed platform is unparalleled in scale with over 200,000 servers across 130 countries, giving customers superior performance and threat protection. Akamai’s portfolio of web and mobile performance, cloud security, enterprise access, and video delivery solutions are supported by exceptional customer service and 24/7 monitoring. To learn why the top financial institutions, e-commerce leaders, media & entertainment providers, and government organizations trust Akamai please visit www.akamai.com, blogs.akamai.com, or @Akamai on Twitter. You can find our global contact information at www.akamai.com/locations. Published 11/17.