FINANCIAL SERVICES

Performance at the speed of disruption

Deliver faster digital experiences for modern financial services

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Overview

The financial services market is no stranger to disruption. Financial institutions have become increasingly more aware of customer needs and competitive dynamics, so they can better react and respond. Institutions spanning the financial services spectrum, from traditional companies with decades of experience to new, cloud-native players, are recognizing the need to be forward-thinking, invest in technology and create more targeted, intuitive and secure customer assets. And, the pressure to reimagine the customer experience often means creating digital interactions that are easy to use, always on, and above all, safe and secure.

Disruption is, and will continue to be, the normal operating environment for companies looking to compete and win in the global economy. Industry leadership and financial rewards will go to those companies able to continually deliver innovative digital experiences to consumer and institutional customers alike.

However, it's one thing to recognize the importance of technological innovation; it's another thing to bring it to life. In this brief, you will learn how Fastly can enable you to deliver performant, secure and innovative digital experiences without sacrificing one for another. We do this by sitting between your web servers (on premise or in the cloud) and your customers where we can process, serve, and secure data at the edge, closer to your end users.

Performance at scale

When it comes to financial services, consumers have increasingly high expectations. They also rarely appreciate the complex technology infrastructure that powers not just their own financial exchanges, but the billions of transactions that are happening instantaneously—such as credit cards being swiped, stock trades being made, and policies being bought and sold.

From the technology side of the equation, it is difficult to predict consumer behavior and the traffic spikes and fluctuations that ensue. What is easy to predict: technical architectures that are not robust are likely to fail under stress.

Many existing technology stacks have possible bottlenecks that are exposed during incidents of high traffic. One such issue can occur when a large number of requests exceeding compute power are received, creating a "thundering herd" problem—for example, when stock market fluctuations cause a rush for trading. Application delivery controllers (ADCs) and many elastic load balancers cannot always solve this problem effectively, potentially resulting in availability issues or performance degradation. Ineffective request collapsing can also present a serious problem at scale by sending multiple identical requests simultaneously, creating unnecessary and potentially problematic load on your origin. This can result in anything from a slow customer experience to a full outage.

For customers, this isn't a technological failure. It's a breach of trust.

Achieving performance at scale requires technology that can address traffic surges when and where they happen—at the network edge—without any capacity constraints or request processing bottlenecks.

> "Although our infrastructure is robust, Fastly gives us additional security and protection from unpredictable traffic spikes. We've hit unprecedented traffic numbers with Fastly without sacrificing performance or needing to invest more in our own infrastructure. Our helpdesk is also reporting very low numbers of issues, so we know we're keeping our customers happy."
>
> – James Cousins
> IT DELIVERY MANAGER
> VIRGIN MONEY GIVING

API caching and acceleration

Application programming interfaces (APIs) are at the core of performance at scale—being able to deliver fast, reliable experiences regardless of traffic fluctuations. APIs enable faster development, real-time data exchange and more secure transactions, and as such, most modern sites and apps are built upon them. But because most API responses change frequently and unpredictably, such as stock prices and financial transaction data, their content can't be cached by legacy content delivery networks

(CDNs) due to their inability to invalidate outdated content instantly. API gateways, located far from customers, have the dual burdens of latency and added cost. Therefore, dynamic content typically remains at the origin server, slowing delivery and racking up infrastructure costs.

These capabilities are also fundamental to enabling open banking. The ability to access bank and customer data creates possibilities for new service offerings that provide additional value to customers, such as personal financial management (PFM) tools, product comparisons and person-to-person (P2P) lending services. By using APIs, financial institutions are able to focus on building value-added capabilities and therefore can much more quickly launch new, differentiating digital products by leveraging both internal and third-party APIs. The need for a performant interface is further bolstered by open banking regulations, including the European Union's second Payment Services Directive (PSD2), that include minimum performance requirements.

Infura, a core infrastructure platform for the Ethereum blockchain, achieved a cache hit ratio of approximately **91%** by caching their APIs on Fastly, saving their origin from around **7-9 billion** additional requests each day.

Rapid innovation and developer enablement

Customer experience is a key differentiator for financial institutions. The ability to design, develop and launch products and services to delight customers is critical—as well as the ability to nimbly iterate for continuous improvement and roll back changes quickly to reduce risk. DevOps practices like continuous integration/continuous delivery (CI/CD), designed to enable engineering agility, have become a key tool in an increasingly competitive marketplace. CI/CD frees developers to consistently innovate and deliver great customer experiences.

Using this methodology, developers can introduce automation into the development process in order to speed up the delivery of new apps or enhance existing ones. By pushing a large number of small changes, error risk is reduced, which is critical for financial services companies handling personally identifiable information (PII) and financial data. Developers are freed to focus on innovation by having the ability to release new code into production on a continuous basis. Even small changes, deployed when customers need it, can have an outsized impact on customer acquisition, retention and satisfaction.

Legacy CDN vendors are not typically compatible with CI/CD practices, so agile development efforts are stuck in release queues with limited visibility. Many financial services companies deal with legacy systems that are difficult to change and cannot always support the innovation vision of company leadership.

Security without sacrifice

The core of financial services security is safeguarding data, ensuring both company and customer data is secure. The most successful brands invest in security to earn consumers' trust in an industry that experiences 35% of all data breaches, making it the most-breached sector.[1]

35%[1]
Of brands experience data breaches

Traditionally, security comes with trade-offs, as security and performance have been at odds. Financial services companies know that their brands are built on trust, and financial transactions are a constant target of hackers, so sacrificing security for speed is not a palatable option. The trade-off occurs when a cloud-based web application firewall (WAF) solution scrubs every request, regardless of client type or cache status, maintaining a high degree of security but degrading the user experience. While legacy CDN solutions can protect you from network and application layer attacks, it's often at the expense of performance.

An additional opportunity to ensure security while maintaining responsiveness is by baking security into your DevOps practice. A CI/CD approach makes secure DevOps possible, which is important to provide the balance between moving quickly and maintaining or improving security. Integrating security into DevOps allows financial services organizations to gain the performance, visibility and control needed to build secure applications that users love. As noted above, legacy CDNs typically lack the capabilities to readily support modern application development practices.

100% of the companies have security, privacy and compliance issues related to abandoned or forgotten web applications, APIs and subdomains.[2]

A 2018 study[2] of 250 Fintechs found that:

100% of the companies have security, privacy and compliance issues related to abandoned or forgotten web applications, APIs and subdomains.

100% of the mobile applications contain at least 1 security vulnerability of a medium risk, 97% have at least 2 medium or high-risk vulnerabilities.

You can't fix what you can't see

Visibility is critical in agile environments. An organization needs to quickly identify and address issues at every stage. Teams need real-time visibility into the requests and responses at the network layer to spot incidents and remediate them quickly—a

[1] Forbes, 2019.

[2] Immuniweb.com, 2018.

capability that legacy CDNs usually cannot support. Without real-time logging, you may be forced to play catch up and constantly deal with blind spots. Inability to examine logs in real time can cause customer behaviors, security issues and website health problems to go unnoticed for extended periods of time, potentially resulting in poor customer experiences, revenue loss and reputational damage.

Why Fastly?

Fastly is an edge cloud platform that enables you to create great digital experiences quickly, securely, and reliably by processing, serving and securing our customers' applications as close to their end-users as possible—at the edge of the internet. The platform is designed to take advantage of the modern internet, to be programmable, and to support agile software development.

Traffic scalability

Fastly's architecture enables our load balancer to instantly scale to multiple terabits per second (Tbps) for cost-effectiveness and transparency. We have no time-based scaling limitations or capacity constraints, unlike ADCs or many elastic load balancers which can be susceptible to the thundering herd problem. Our network can easily accommodate traffic spikes without the need to modify your infrastructure.

We can also help to reduce unnecessary origin traffic through highly efficient request collapsing. During high-traffic events, a high volume of legitimate traffic can overwhelm your origin. Fastly can ensure only a single request is passed to origin regardless of how many simultaneous requests you receive at the edge for a single object. This will immediately reduce your egress and compute costs, while improving resiliency.

Our network can easily accommodate traffic spikes without the need to modify your infrastructure.

Fresh content, served faster

By caching more at the edge, Fastly's platform enables you to make global updates almost instantly. Just as important, you have the ability to programmatically purge invalid content in 150 milliseconds on average. This near real-time purge capability is fundamental to caching event-driven content such as API responses, as legacy CDNs can

take much longer to fully clear content from cache, making them unable to cache APIs.

Legacy CDNs may cache content using a low "time-to-live" (TTL) setting in the CDN. TTL determines how long an object should remain in the CDN cache before it expires and therefore has to be refreshed from origin. This workaround strategy has an undesirable side effect, especially for financial services providers: stale content like changed stock prices and outdated balances may be served if it changes at the origin before the TTL expires. A 60-second TTL is a large enough window to cause an inconsistent or confusing user experience. Conversely, a very low TTL leads to premature expiration of content, which results in the origin infrastructure bearing more load than is necessary.

Integrated security

Fastly offers a single, secure platform that is designed for performance. With near real-time analytics and streaming logs, you can instantly see potential threats and take immediate action. You can adjust security controls in real-time based on traffic you see—changes are pushed out globally in seconds.

Fastly's WAF helps eliminate the trade-off between security and high-quality performance; customers benefit from complete control and real-time visibility, without the latency issues associated with many WAFs. Because Fastly's WAF analyzes, filters and blocks only origin-bound traffic attempting to refresh the cache, most attack traffic is stopped at the Fastly cache, protecting your origin traffic from malicious attacks while providing a great user experience for your customers. Fastly's PCI DSS-compliant network delivers powerful edge enforcement for faster protection against the latest-known web application vulnerabilities, distributed denial of service (DDoS) and botnet attacks.

In addition, Fastly's platform is real-time, programmable and API-friendly—everything you need to incorporate a secure DevOps practice. Integrating security as part of your development process, versus bolting it on at the end, not only ensures greater security, but does so without impact to performance.

Little things can make a big difference

Small changes can have a big impact on user acquisition and retention, so financial services companies would be well-served to make changes continuously. Fastly is an open platform partner that can facilitate CI/CD. Our API-first approach means that all platform functionality is accessible via our API, so you can integrate Fastly into your existing workflows.

Insights into your digital health

With Fastly, you gain those vital, actionable insights into the digital health of your services with real-time logs streamed from the edge. You get near real-time, comprehensive log files for timely analysis of user engagement and early detection of potential problems—log nearly any aspect of a request or response and stream files to over 20 endpoints, including Sumo Logic, Splunk and Honeycomb. Or send a sample of log files to an endpoint by changing the parameters via API. Moreover, you can monitor the impact of new code deployments and, with Fastly's versioned platform, roll back to previous stable code within seconds in case of issues.

Consultative partnership

Fastly is more than a vendor—we're a consultative partner you can consider as an extension of your team. We work with financial services companies to truly understand their business objectives, and help design flexible solutions to deliver performant, secure—and truly excellent—digital experiences. You'll have the flexibility you need to implement changes yourself, or leverage our white-glove support.

Disruption is the new normal, driving financial institutions to differentiate from their competition by delivering innovative solutions that delight customers with fast, secure experiences around the globe. Fastly can help you make it happen. To learn more about how we can support your digital transformation strategy, contact Fastly at sales@fastly.com.

> "A strong, growing partnership with Fastly helps us ensure that we deliver a customer experience that is in line with our brand. We have worked together closely on our journey to make life easy for customers and make sure our customers love us."
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