AKAMAI CUSTOMER STORY

Akamai API Gateway kept unprecedented levels of access traffic under control during the video streaming of an international soccer competition that had the whole world excited.

Interest around Japan in live coverage of an international sports tournament

Addresses sharp increases in numbers of simultaneous visits

Securely control even popular sports games with Akamai API Gateway

Soccer tournament that draws worldwide interest raises concerns over infrastructure overload

This video streaming service, ABEMA, is managed by AbemaTV Inc. (hereinafter referred to as 'AbemaTV') and aims to bring innovation to television programs to be the 'TV for the future'. No registration is required and approximately 25 channels are streamed 24 hours a day, 365 days a year across a variety of genres, including Japan's only 24-hour news channel, as well as original series, romance programs, anime and sports. It can be easily viewed from a smartphone, tablet, PC, television or another device. The ABEMA video app has surpassed 96 million downloads (as of April 2023), and premium membership, which offers exclusive content, chase playback and on-demand viewing, is growing steadily.

In 2022, ABEMA decided to broadcast a globally high-profile international soccer tournament, enabling all soccer games to be viewed live for free. Because the Japan team was expected to perform well, the tournament had already attracted considerable interest before it was held. During the tournament, app downloads increased by approximately seven million, and the number of viewers (WAU: weekly active users) reached a record high of 34.09 million for a single week.

"It's an extremely popular tournament, so it was obvious that a lot of viewers would rush to see it. We experienced unprecedented access numbers and it was not difficult to foresee that there would be a significant load on our infrastructure. Naturally, we could make an educated guess on the figures based on a variety of past data. However, predicting the upper bound of the number of accesses (visitors), especially before and after the start of a soccer game, was difficult. We feared that sudden spikes in load might prevent the servers from scaling in time. Ensuring the capacity of our video streaming infrastructure through a CDN was essential for stable video delivery. We also recognized that the capability of controlling the number of connections by API requests per time unit (visit rate) would be essential," said Ryota Nishio, CTO of AbemaTV.

Another method to control access was to set up virtual waiting rooms. However, it was determined that the structure would have been complicated, the controls would not have been precise enough for the massive number of connections per second anticipated, and the uncertainty of its correlation with the server load would also increase.

Precise visitor volume controls without overloading servers

The greatest challenge in controlling the visit rate during the tournament was high-precision throttling of server API request volumes after connections to ABEMA from browsers or apps were initiated.

We considered developing an in-house traffic throttling mechanism, which could make or break the project. However, we needed to decide on a format in the limited time between the start of discussions and the start of the tournament and test its performance fully. That is why ABEMA used Akamai Event Support. While receiving robust support from Akamai's technical consultant engineer, we considered and tested several methods. Ultimately, we decided to adopt Akamai API Gateway.

ABEMA
TV for the Future

Company

AbemaTV Inc.
Location: 40–1 Udagawacho, Shibuya, Tokyo
Abema Towers
Founded: April 2015
https://abematv.co.jp/
https://abema.tv/

Industry

Video streaming business

Challenges

- Detailed real-time controls for visitor traffic
- Structured so as not to burden servers by processing in Edge
- Maintain a stable viewing experience in-app or on the web

Solutions

- Akamai API Gateway

Akamai

Specifically, Akamai API Gateway was set as the API destination (API endpoint) requested when the viewing lient app starts up, and API throttling was used to control traffic per unit of time. Upon doing so, we went with a format in which only users who received a predefined API response from Akamai API Gateway indicating a normal status could continue with the start-up process. If a preconfigured rate value was exceeded, Akamai API Gateway returned a predefined error. Start-up operations for apps that received an error are stopped, so the servers were not burdened by that API's subsequent processing.

"I believe that Akamai API Gateway is an unrivaled service that enables us to control API request rates down to the second. If this kind of control is performed with a CDN, it is common for implementations to define the traffic rate to the servers for each edge server running. In this case, controlling the gross volume per second that the servers received from multiple edge servers is technologically difficult. It is also possible that the servers could be burdened with a load exceeding what was expected. While dispersing Akamai's Edge requests, Akamai API Gateway can configure the number of requests per interval based on the gross volume received by a server. Furthermore, following detailed verification, the precision of rate control was found to be exceptional compared to other solutions under consideration. It was determined that this solution could maintain control of viewer traffic according to a set flow rate, even when there is a large amount of traffic. With Akamai API Gateway, being able to finely control the number of per-second connections to the servers allowed for server-side infrastructure to be set up for the duration of the event with pre-tested conditions, eliminating unforeseen issues and costs," said Junpei Tsuji, an Engineer at the Development Department of AbemaTV.

Tsuji reflected on the value of the support of the technical consultant engineer even at the verification phase leading up to full operation. Through web meetings and by using chat tools, we gained prompt and appropriate answers to detailed questions and completed the implementation smoothly. In fact, once we decided to introduce Akamai API Gateway, implementation was completed within a short period—approximately one month.

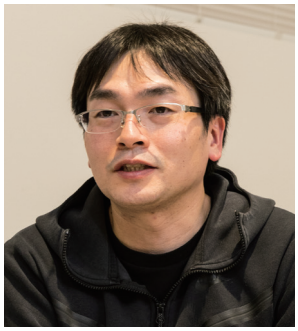
Generous technical support for sophisticated control and stable video streaming of popular sports games.

Nishio said that Akamai API Gateway enabled them to "operate exactly as we expected" during the tournament. We were fully prepared to host the tournament because ABEMA's system structure originally allowed for flexibility. That said, during the highly popular Japanese teams' games, the upper limit configured on Akamai API Gateway was surpassed several times, triggering the rate control. Despite this, visitor traffic controls were triggered dependably, enabling continued stable streaming. Nishio spoke highly of the service, stating: "Their ability to answer our high-level demands reflected the high caliber of their services. We were completely at ease as we streamed our content."

In addition, Tsuji said, "Akamai has a wealth of experience in supporting the streaming of a vast array of large-scale events worldwide. It stands head and shoulders above all other similar services because of the stability and scalability made possible by its hyper-distributed architecture. It also offers tremendously effective features in terms of enhanced API security. Furthermore, we look forward to the potential computing infrastructure produced by the convergence of cloud servers and Edge due to Akamai's offering of IaaS-like cloud services. That being said, the flexibility of the service and configurations is almost too high, causing me to appreciate the extent of the technological hurdles we faced. Because Akamai provides robust technical support, we intend to make the most of it and hope to reproduce comparable results."

In the future, AbemaTV is determined to increase ABEMA's value as "social infrastructure you can connect to any time, anywhere." In addition to our core sports live streaming service, we plan to further expand our variety of programs and continually offer popular content that broad audiences will enjoy.

"For us and our goal of becoming part of the social infrastructure, it is important that our CDNs and various other network technologies will continue to progress to increasingly higher levels of quality and sophistication," said Nishio. "I anticipate that Akamai API Gateway and their range of other services will continue to evolve and become more user-friendly." Nishio further expressed his expectations, saying, "Akamai is also a leader in developing Internet service technology, so I hope they will actively suggest application methods and continue to support our ABEMA service."



Ryota Nishio
CTO
AbemaTV Inc.

Junpei Tsuji
Engineer, Development Department
AbemaTV Inc.

"Akamai API Gateway performed flawlessly — it was able to keep sudden spikes in traffic under control. When we had virtually no time before the tournament, Akamai's comprehensive technological support was a lifesaver. Product selection, verification of its performance and implementation all went smoothly."
Ryota Nishio
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TV for the Future

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Akamai

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